

Preliminary Report on the Accident Involving a Bell 429 helicopter owned and operated by Nigeria Police Air Wing with Nationality and Registration marks 5N-MDA which occurred at Sir Abubakar Tafawa Balewa Airport Bauchi; Nigeria on 26th January, 2022.

Registered owner:	Nigeria Police Force
Operator:	Nigeria Police Air Wing
Aircraft type and model:	Bell 429
Manufacturer:	Bell Textron, Canada
Year of manufacture:	2012
Nationality and registration marks:	5N-MDA
Serial number:	57084
Location:	2.1 NM from the end of runway 35 outside the perimeter fence of Sir Abubakar Tafawa Balewa Airport Bauchi, Coordinate 10° 28' 6" N, 9° 44' 14" E
Date and time:	26 th January, 2022 at 19:47 h

All times in this report are local time (UTC +1) unless otherwise stated.

INTRODUCTION

Accident Investigation Bureau, Nigeria (AIB) was notified of the accident by Nigerian Airspace Management Agency (NAMA) by phone call at 23:11 h, on 26th January, 2022. Investigators arrived the accident site on 27th January, 2022. Post occurrence assessment commenced immediately under the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2019 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, site of occurrence and preliminary inspection of the aircraft.

The investigation is ongoing.

1.0 FACTUAL INFORMATION

1.1 History of the flight

On 26th January, 2022, at 17:54 h, a Bell 429 helicopter owned by Nigeria Police Force and operated by Nigeria Police Air Wing (NPAW) with nationality and registration marks 5N-MDA, departed Nnamdi Azikiwe International Airport, Abuja (DNAA) to Maiduguri on a Visual Flight Rules (VFR) flight plan with a planned technical stop at Sir Abubakar Tafawa Balewa Airport, Bauchi (DNBC). On board were 6 persons inclusive of 3 crew members (Pilot, Co-pilot and Engineer), and 3 passengers with fuel endurance of 3 hours.

5N-MDA was scheduled to depart DNAA for DNBC for technical stop and layover before proceeding to Maiduguri, next day. 5N-MDA was scheduled as a supplement for the first Helicopter (5N-PEJ), that departed Abuja for Maiduguri earlier same day for administrative activities.

The Pilot was the Pilot Flying (PF) while the Co-pilot was the Pilot Monitoring (PM).

According to the ATC transcript, at 17:45 h, 5N-MDA contacted Abuja Tower and requested for engine start to DNBC. Tower asked "MDA confirm you filed a flight plan?" MDA responded in the affirmative.

Abuja Tower then asked 5N-MDA for her planned Cruise Altitude to DNBC. 5N-MDA responded that they requested for 5500 ft. Tower responded "5.5 ft to DNBC copied, Start-up approved QNH 1009 squawk 2723". 5N-MDA acknowledged.

At 17:50 h, tower cleared 5N-MDA to Abuja Control Zone boundary enroute Bauchi not above 5500 ft and to standby lift. Tower then passed prevailing wind as 110 / 04kts and further cleared 5N-MDA to lift, left turn out after lift. 5N-MDA responded "cleared to lift, left turn out, MDA".

5N-MDA

Abuja Tower transmitted the lift up time as 17:54 h to 5N-MDA and requested her to report estimate when ready. 5N-MDA responded "zone out will be at time 05 next hour and destination Bauchi will be at 16:30".

Tower acknowledged and transferred 5N-MDA to Abuja Radar on 127.9 MHz and further instructed to stay clear of DNP4. 5N-MDA acknowledged.

5N-MDA established contact with Abuja Radar. Abuja Radar identified 5N-MDA at 5 NM South East of Abuja Airport and requested for estimate Control Zone boundary out and ETA Bauchi. 5N-MDA acknowledged "zone boundary out will be 06 next hour and Bauchi will be at 37MDA".

According to the crew, Abuja Radar instructed 5N-MDA to contact Jos Tower on 122.7 MHz, 5N-MDA tried to establish contact with Jos Tower, but after several trials, could not establish contact with Jos Tower. 5N-MDA continued with the flight to DNBC as filed.

The crew further stated that at 18:40 h, when they were abeam Jos Airport (DNJO), they tried again to establish two-way communication with Jos Tower, but that was not successful. The flight still continued as filed.

At 18:46 h, 5N-MDA tried to establish initial contact with Bauchi Tower on 124.5 MHz, but no response from Bauchi Tower.

According to the crew, 5N-MDA consistently tried to raise Bauchi Tower at five-minute intervals until the time she reached Bauchi Control Zone boundary, with still no contact. Thereafter, 5N-MDA continued with preparations for landing with the belief that even if the Tower was closed, provided the airport was illuminated, they could land. The crew further stated that at 5 NM to DNBC, there was no sign of any lighting at the airport as the entire airport was in complete darkness. 5N-MDA descended to 3,000 ft and positioning for the runway centreline using Global Positioning System (GPS). They came over the runway and the PM was able to have a visual contact with the runway centreline,

but soon after, the PM lost the visual contact with the centreline due to darkness and therefore called for a Go Around. The PF responded and initiated the Go Around, while the PM pressed the GA button. 5N-MDA executed two Go Around with intention to land, but due to lack of airfield lighting and darkness, the crew could not sight the runway.

During the final approach to land at the third attempt, the PM suddenly saw a tree on its flight path which was neither detected by the Ground Proximity Warning System (GPWS) nor the Terrain Awareness Warning System (TAWS). The crew verified that both systems were certified functional prior to the flight, also the Aural Warning (AW) did not sound and the visual display didn't indicate that the aircraft was approaching an obstacle.

Information available to AIB-N showed that up to 19:00 h, there was no request for extension from NPAW, no information from either Kano ACC or Abuja Tower about late operation and there was also no flight plan message to DNBC. The duty officer closed from duty at 19:00 h.

At about 19:47 h, as the crew pulled up to avoid the tree, one of the Main Rotor blades hit the branches of the tree while the helicopter Tail Rotor struck the tree which resulted in the accident. At that moment when the Skid of the helicopter had contact with the ground, Bauchi Tower called 5N-MDA on radio "Aircraft calling Bauchi tower" and the PM replied "we are on ground." Bauchi Tower further asked "confirm on ground air force side? ", but the crew did not respond.

The crew and passengers disembarked without injury.

The accident occurred at about 19:47 h, night time in Instrument Meteorological Conditions (IMC).

1.2 Injuries to persons

Injuries	Crew	Passengers	Others	Total in the aircraft
Fatal	Nil	Nil	Nil	Nil
Serious	Nil	Nil	Nil	Nil
Minor	Nil	Nil	Nil	Nil
None	3	3	Nil	6
Total	3	3	Nil	6

1.3 Damage to aircraft

The aircraft was substantially damaged.

1.4 Other damage

Nil

1.5 Personnel information

1.5.1 Pilot

Nationality:	Nigerian
Age:	58 Years
Licence type:	Commercial Pilot Licence (Helicopter)
Licence:	Valid till 31 st January, 2023
Aircraft ratings:	Part 1: Bell 412 Part 2: Bell 429
Medical certificate:	Valid till 7th April, 2022
Instrument rating:	Valid till 3rd May, 2022

Simulator:	Valid till 3rd May, 2022 (Bell 429)
Total flying time:	2550 h
Total on type:	160 h
Last 90 days:	85 h
Last 28 days:	10 h
Last 7 days:	5 h
Last 24 hours:	5 h

1.5.2 Co-Pilot

Nationality:	Nigerian
Age:	30 years
Licence type:	Commercial Pilot Licence (Helicopter)
Licence:	Valid till 28th August, 2023
Aircraft ratings:	Part 1: R-66, Bell 429
Medical certificate:	Valid till 14th December, 2022
Instrument rating:	Valid till 22nd March, 2022
Simulator:	Valid till 22nd March, 2022 (Bell 429)
Total flying time:	177 h
Total on type:	35:30 h
Last 90 days:	10 h
Last 28 days:	10 h
Last 7 days:	4 h
Last 24 hours:	Nil

1.5.3 Dispatcher

Nationality:	Nigerian
Age:	44 years
Licence type:	Flight Dispatcher Licence
Licence:	Valid till 17th May, 2026
Recurrency:	Valid till 25th February, 2022
Competency:	Valid till 24th February, 2022

1.6 Aircraft information

1.6.1 General information

Type:	Bell 429
Manufacturer:	Bell Helicopter Textron, Canada
Date of manufacture:	2012
Serial number:	57084
Registered owner/operator:	Nigeria Police Airwing
Nationality and registration marks:	5N-MDA
Certificate of Airworthiness:	Valid till 25th January, 2023
Certificate of Insurance:	Valid till 18th February, 2022
Certificate of Registration:	Issued 26th February, 2013
Noise Certificate:	Issued 14th March, 2013
Airframe time:	589:48 h

5N-MDA

Cycles since new (CSN): 1006



Figure 1: 5N-MDA in NAIA police hangar before the occurrence

1.6.2 Power plant

Engine	Number 1	Number 2
Manufacturer	Pratt & Whitney Canada	Pratt & Whitney Canada
Model	PW207D1	PW207D2
Serial number	PCE-BLO173	PCE-BLO172
Time Since New (TSN)	688 h	688:12 h
Cycles Since New (CSN)	657	654

Fuel type used: Jet A-1

1.7 Meteorological information

1800UTC Weather report for DNBC for 26th January, 2022

CODED: METAR DNBC 261800Z 20006KT 4000 HZ NSC24/06 Q1017=

DECODED: Meteorological report issued at 1800UTC (7PM) for Bauchi Airport on 26th January, 2022: the wind direction was south westerly at 200 degrees with mean speed of 6 knots (3.1 metres per seconds); Horizontal visibility was 4000m with no cloud of operational significance, Temperature and Dew Point were 24°C and 06°C respectively while Mean Sea Level Pressure was 1017 hPa.

1.8 Aids to navigation

The conditions of the navigational aids at Bauchi airport on the day of the occurrence were as follows:

1. 'BCH' VOR/DME BCEP 115.6 MHZ	Unserviceable
2. 'BU' NDB BCEP 323KHZ	Serviceable
3. 'IBT' ILS BCEP 111.3MHZ	Unserviceable
4. Crash alarm bell and signal lamp	Serviceable
5. Wind direction and speed indicator	Unserviceable

However, at the time of arrival of 5N-MDA, all the Navigational Aids at DNBC were switched off (not in operation).

1.9 Communications

There was two-way communications between Abuja ATC and the Helicopter from Engine Start, Taxi and Lift up to Control Zone boundary. 5N-MDA tried to establish contact with Jos Tower but there was no response. There was no communication between 5N-MDA and the DNBC Tower.

Status of communication equipment at DNBC:

1. VHF frequency 124.5 MHZ (main)	Serviceable
2. VHF frequency 11 9.6MHZ (secondary)	Serviceable
3. VHF frequency 121.7 MHZ (domestic)	Serviceable
4. HF frequency 9495/8903 KHZ (variable)	Serviceable
5. ICOM mobile radio	Serviceable
6. ATC Digital clock and intercom	Serviceable

1.10 Aerodrome information

Sir Abubakar Tafawa Balewa Airport, Bauchi (DNBC) is located 14 miles (23 km) North-West of Bauchi town. The airport reference point is 10°29'00" N, 009°44'40" E and elevation of 1965 ft (599.067 m) with a runway orientation of 17/35. The length and width of the runway are 11155 ft (3,400 m) and 147.64 ft (45 m) respectively. It also has an asphalt surface.

DNBC operations hours are from 07:00 h and 19:00 h.

1.11 Flight recorders

The helicopter was not fitted with flight data and cockpit voice recorders; neither was it required by the Nigeria Civil Aviation Regulations (Nig. CARs).

1.12 Wreckage and impact information

During approach the helicopter Main Rotor hit the top branches of the tree, while the Tail Rotor impacted a tree of about 5m high and crash landed on heading 359°. The helicopter came to a stop at a distance of 20.60 m from the tree.

The damage sustained by the helicopter are:

1. One Main Rotor Blade was damaged
2. The Tail Boom of the helicopter was sheared off
3. The Tail Rotor Shaft was broken
4. The Tail Rotor Blades had minor damage at their Leading Edges
5. The helicopter left side Skid collapsed
6. The right side aft passenger window was broken
7. The right side Vertical Stabilizer was broken

5N-MDA



Figure 2: Right view of the helicopter post occurrence



Figure 3: Left view of the helicopter post occurrence



Figure 4: Damaged Main Rotor Blade



Figure 5: Damaged Tail Boom

5N-MDA



Figure 6: Collapsed left side Skid



Figure 7: Damaged Vertical Stabilizer

1.13 Medical and pathological information

Toxicology and alcohol test was carried out on the flight crew by the Nigerian Airforce Clinic at the airport.

1.14 Fire

There was no pre or post impact fire.

1.15 Survival aspect

The accident was survivable; there was liveable volume in the cockpit. The seat and the seat restraints were found intact and operated well. The crew and passengers exited the aircraft through the normal exit door.

2.0 INITIAL FINDINGS

1. The Pilot's Simulator (Bell 429) is valid till 3rd May, 2022.
2. The Co-Pilot's Simulator (Bell 429) is valid till 22nd March, 2022.
3. 5N-MDA had a valid certificate of airworthiness at the time of the occurrence.
4. Bell 429 was not included in NPAW AMO operations specifications (OPSPECS).
5. NPAW does not have approved Standard Operating Procedures (SOPs).
6. 5N-MDA lifted off at 17:54 h from Abuja airport (DNAA) on a Visual Flight Rules (VFR) flight plan.
7. The crew could not establish contact with Jos Tower and the flight continued as filed.
8. The operational hours of Bauchi airport (DNBC) is between 07:00 h and 19:00 h daily.
9. The crew could not establish two-way radio communication with DNBC until after the crash.
10. BCH' VOR/DME BCEP 115.6 MHZ was unserviceable on the day of the occurrence.
11. The airport DNBC was in darkness at the time of arrival of 5N-MDA.
12. The crew had a visual contact with the runway centreline but soon lost visual contact with the runway centreline due to darkness.
13. The crew executed two Go-Around and 5N-MDA crashed on the third landing attempt.
14. Neither the Ground Proximity Warning System (GPWS) nor the Terrain Awareness and Warning System (TAWS) detected the tree.
15. The helicopter Tail Boom struck a tree and sheared off during the third landing attempt.
16. The accident occurred at about 19:47 h, night time in Instrument Meteorological Conditions (IMC).
17. The crew and passengers disembarked the helicopter without injury.

IMMEDIATE SAFETY RECOMMENDATIONS

Nigerian Police Air Wing (NPAW) should:

1. As a Non Commercial Corporate Aviation Service operator, NPAW must adhere to the applicable provisions of the Nigerian Civil Aviation Regulations (Nig. CARs 2015) sub part 8.6 on Flight Planning and Supervision.
2. Ensure that its flight crew take cognisance and adhere strictly to the operating hours of destination and alternate airfields before the commencement of flights.
3. Ensure that its crew adhere strictly to the relevant provisions of Nigeria Civil Aviation Regulations (Nig. CARs 2015) in their operations.
4. Develop operations manual and SOPs as required by Nigerian Civil Aviation Regulations (Nig. CARs 2015), sub part 8.14 for a Corporate Aviation Services Operator and submit to NCAA for approval.

Nigerian Aerospace Management Agency (NAMA) should:

1. Ensure the conduct of VFR flights is in accordance with Nigerian Civil Aviation Regulations (Nig.CARs Part 14, 2015) and Nigerian Airspace Management Agency's ATM Manual of Operations.
2. Ensure adequate and timely coordination of VFR flights between departure and destination aerodromes.
3. Ensure that VFR flight operations are conducted within the weather minima and specified for such operations.
4. Ensure that VFR flight operations are operated within the operational hours of the destination Aerodrome.

Nigerian Civil Aviation Authority (NCAA) should:

1. Ensure that Nigerian Aerospace Management Agency always verifies that all VFR flights arrive destinations within the operational duty hours of the destination airport and that the conducts of the flight meet the minimum VFR flights requirements, in accordance with the Nigeria Civil Aviation Regulations (Nig. CARs 2015) and Nigerian Aerospace Management Agency's approved manuals.
2. Ensure that Nigeria Police Air Wing adheres to the applicable provisions of the Nigerian Civil Aviation Regulations (Nig. CARs 2015) sub part 8.6 on Flight Planning and Supervision.
3. Ensure that Nigeria Police Air Wing made adequate provision of qualified and certified personnel to manage their Flight Planning and Supervisions unit.