# AIRCRAFT ACCIDENT REPORT

GAL/2020/09/10/F

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**Accident Investigation Bureau**

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**Final Report on the serious incident involving BAe 125-800B aircraft with nationality and registration marks 5N-BOO operated by Gyro Air Limited which occurred at Osubi Airstrip, Warri, Nigeria On 10th September, 2020**

This report was produced by the Accident Investigation Bureau, Nigeria (AIB), Nnamdi Azikiwe International Airport, Abuja.

The report was based upon the investigation carried out by AIB, in accordance with Annex 13 to the Convention on International Civil Aviation, Nigerian Civil Aviation Act 2006 and Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2019.

In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of aircraft accident/serious incident investigations to apportion blame or liability.

Readers are advised that AIB investigates for the sole purpose of enhancing aviation safety. Consequently, AIB reports are confined to matters of safety significance and should not be used for any other purpose.

The AIB believes that safety information is of great value if it is passed on for the use of others. Hence, readers are encouraged to copy or reprint reports for further distribution, acknowledging the AIB as the source.

Safety Recommendations in this report are addressed to the Regulatory Authority of the State, as well as other stakeholders, as appropriate. The Regulatory Authority is the authority that ensures implementation and enforcement.



**Printed in Nigeria for the Accident Investigation Bureau (AIB)**

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# GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

| | |
|---|---|
| AIB-N | Accident Investigation Bureau, Nigeria |
| AIS | Aeronautical Information Service |
| AMSL | Above Mean Sea level |
| AOC | Air Operator Certificate |
| ATC | Air Traffic Control |
| ATCS | Air Traffic Control Services |
| ATM | Air Traffic Management |
| ATS | Air Traffic Services |
| AW | AgustaWestland |
| CVR | Cockpit Voice Recorder |
| DNAA | ICAO Code for Nnamdi Azikiwe International Airport, Abuja |
| DNSU | ICAO Code for Osubi Airstrip, Warri |
| FDR | Flight Data Recorder |
| FL | Flight Level |
| GAL | Gyro Air Limited |

| | |
|---|---|
| ICAO | International Civil Aviation Organization |
| IFR | Instrument Flight Rules |
| M | Magnetic |
| NAMA | Nigerian Airspace Management Agency |
| NCAA | Nigerian Civil Aviation Authority |
| Nig. CARs | Nigeria Civil Aviation Regulations |
| NOTAM | Notices to Airmen |
| PF | Pilot Flying |
| PM | Pilot Monitoring |
| RT | Radio Telephony |
| RWY | Runway |
| SARPs | Standards and Recommended Practices |
| SOP | Standard Operating Procedures |
| SOS | Shoreline Oil Services |
| SPDC | Shell Petroleum Development Company |
| TWR | Tower |
| VMC | Visual Meteorological Conditions |

| | |
|---|---|
| WA | Whiskey Alpha |

| | |
|---|---|
| **Aircraft Accident Report number:** | GAL/2020/09/10/F |
| **Registered owner/operator:** | Gyro Air Limited |
| **Aircraft type and model:** | British Aerospace BAe 125-800B |
| **Manufacturer:** | British Aerospace Public Limited Company |
| **Year of manufacture:** | 1990 |
| **Serial number:** | 258143 |
| **Nationality and registration marks:** | 5N-BOO |
| **Location:** | Runway 24, Osubi Airstrip |
| **Date and time:** | 10th September, 2020 at 15:23:50 h (*All times in this report are local time equivalent to (UTC+1) unless otherwise stated*) |

# SYNOPSIS

Accident Investigation Bureau, Nigeria (AIB-N) was notified of the incident by Gyro Air Limited (GAL) on 10th September, 2020. Investigators were dispatched the following day and commenced the investigation into the circumstances surrounding the occurrence.

On 10th September 2020 at about 15:02 h, a BAe 125-800B aircraft with nationality and registration marks 5N-BOO, operated by Gyro Air Limited as a charter flight, arrived Osubi from Abuja for a drop-off and return to Abuja.

The flight was scheduled to depart Osubi airstrip, Warri (DNSU) to Nnamdi Azikiwe International Airport, Abuja (DNAA) at about 15:13 h on an Instrument Flight Rules (IFR) flight plan. There were 3 crew members on board and endurance of 3 hours 30 minutes. The Pilot was the Pilot Flying (PF) while the Co-pilot was the Pilot Monitoring (PM).

At 15:23:18 h, the flight crew completed the LINE-UP checks. While advancing the thrust levers for a short field take-off, an AgustaWestland AW139 helicopter with registration 5N-CHO operated by Caverton Helicopters called the TWR and reported airborne from Whiskey Alpha (WA) helipad (located 7 NM and bearing 247° M from Osubi airstrip) climbing out of 1700ft for 2500ft. TWR cut into the transmission and called out three times, *Bravo Oscar Oscar hold position.* Meanwhile, 5N-CHO continued transmitting its traffic information simultaneously until the message was completed.

At 15:23:50 h, TWR continued *Bravo Oscar Oscar hold position.* In response, the crew of 5N-BOO aborted take-off at a speed of 86 knots and maximum braking was applied. The aircraft taxied back to the apron, the crew disembarked normally and discovered the left main wheel tyres (No.1 and No.2) had deflated.

The incident occurred at 15:23:50 h, in daylight. Visual Meteorological Conditions (VMC) prevailed at the time of occurrence.

The investigation identified the following:

**Causal factor**

Aborted short field take-off that necessitated the use of maximum braking which led to deflation of the left main wheel tyres (no.1 and no.2) due to lack of effective communication between the Air Traffic Control (ATC) and 5N-BOO.

**Contributory factors**

1. Noncompliance with NCAA audit directives by Shoreline Oil Services.
2. The absence of an established procedure to contain local traffic operating around Osubi airstrip.

**Eight safety recommendations were made.**

# 1.0 FACTUAL INFORMATION

## 1.1 History of the flight

On 10th September 2020 at about 15:02 h, a BAe 125-800B aircraft with nationality and registration marks 5N-BOO, operated by Gyro Air Limited as a charter flight, arrived Osubi from Abuja for a drop-off and return flight to Abuja same day.

The flight was scheduled to depart Osubi airstrip Warri, (DNSU) to Nnamdi Azikiwe International Airport, Abuja (DNAA) at about 15:13 h on an Instrument Flight Rules (IFR) flight plan. There were 3 crew members on board and endurance of 3 hours 30 minutes. The Pilot was the Pilot Flying (PF) while the Co-pilot was the Pilot Monitoring (PM).

As at the time of the occurrence, Osubi airstrip was managed and operated by Shoreline Oil Services Limited (SOS). The Nigeria Airspace Management Agency (NAMA) provided air traffic control services while the Nigerian Meteorological Agency (NiMet) had no presence at Osubi airstrip.

At 15:18:24 h, 5N-BOO requested engine start up clearance to Abuja for Flight Level (FL) 210 from Osubi Tower (TWR). TWR granted the start-up and instructed 5N-BOO to report when ready for taxi.

At 15:19:31 h, the flight crew completed the BEFORE START checks, started the engine and reported to the TWR, *5N-BOO ready for taxi*. TWR granted 5N-BOO taxi clearance.

At 15:20:27 h, 5N-BOO was further cleared to enter and back track for take-off on Runway (RWY) 24.

At 15:22:06 h, during taxi TWR issued ATC departure clearance to 5N-BOO to Abuja for initial climb to FL050 and to request level change en route, which the crew acknowledged.

TWR subsequently cleared 5N-BOO for take-off RWY 24 with an instruction to turn right after take-off. 5N-BOO read back the clearance and TWR confirmed it as correct.

At 15:22:32 h, the flight crew completed the BEFORE TAKE-OFF checks.

At 15:23:18 h, the flight crew completed the LINE-UP checks and while advancing the thrust levers for a short field take-off roll; an AgustaWestland AW139 helicopter with registration 5N-CHO operated by Caverton Helicopters called the TWR. TWR asked 5N-CHO to go ahead.

At 15:23:44 h, 5N-CHO reported to TWR that they were airborne from Whiskey Alpha (WA) helipad (located 7 NM and bearing 247° M from Osubi airstrip) climbing out of 1700ft for 2500ft. TWR cut into the transmission and called out three times, *Bravo Oscar Oscar hold position.* Meanwhile, 5N-CHO continued transmitting its traffic information simultaneously until the message was completed.

At 15:23:50 h, TWR continued *Bravo Oscar Oscar hold position.*

According to the flight crew of 5N-BOO, at the speed of about 86 knots, the take-off was aborted with maximum braking applied.

At 15:24:11 h, the flight crew of 5N-BOO asked: *Osubi why did you ask us to abort,* the TWR responded: *sorry about that there is err guy crossing on your right path ahead of you.*

5N-BOO came to a stop at 1164.45m from the threshold of RWY 24 and taxied back to

the apron. The crew disembarked normally and discovered the left main wheel tyres (No.1 and No.2) had deflated.

The incident occurred at 15:23:50 h, in daylight.

Visual Meteorological Conditions (VMC) prevailed at the time of occurrence.

## 1.2 Injuries to persons

| Injuries | Crew | Passengers | Total in the aircraft |
|---|---|---|---|
| **Fatal** | Nil | Nil | Nil |
| **Serious** | Nil | Nil | Nil |
| **Minor** | Nil | Nil | Nil |
| **None** | 3 | Nil | 3 |
| **TOTAL** | 3 | Nil | 3 |

## 1.3 Damage to aircraft

The aircraft was slightly damaged.

**Figure 1:** The left main wheel tyres (No.1 and No.2) deflated

## 1.4 Other damage

Nil.

## 1.5 Personnel information

### 1.5.1 Pilot

| | |
|---|---|
| Nationality: | Ghanaian |
| Age: | 60 years |
| Licence type: | Airline Transport Pilot Licence (Aeroplane) |
| Licence: | Valid till 2nd December, 2020 |

| | |
|---|---|
| Aircraft ratings: | Piper Aztec-23, Boeing737-200, DASH-6 (TWIN OTTER), Hawker Siddeley-125/800XP, BAC 1-11, Cessna-172, Piper Aztec-28, Fokker-28-400, McDonnell Douglas-9 |
| Medical certificate: | Valid till 2nd December, 2020 |
| Proficiency: | Valid till 31st December, 2020 (HS-I25/800XP) |
| Total flying time: | 14,800 h |
| Total on type: | 3,000 h |
| Total on type (PIC): | 3,000 h |
| Last 90 days: | 20 h |
| Last 28 days: | 10 h |
| Last 7 days: | 06 h |
| Last 24 hours: | 03 h |

### 1.5.2 Co-Pilot

| | |
|---|---|
| Nationality: | Nigerian |
| Age: | 35 years |
| Licence type: | Commercial Pilot Licence (Aeroplane) |
| Licence: | Valid till 12th November, 2020 |
| Aircraft ratings: | Single Engine, Multi Engine, Hawker Siddeley-125/800XP |
| Medical certificate: | Valid till 12th November, 2020 |
| Simulator: | Valid till 18th September, 2020 (HS-I25/800XP) |

| | |
|---|---|
| Total flying time: | 748 h |
| Total on type: | 457 h |
| Last 90 days: | 153 h |
| Last 28 days: | 32 h |
| Last 7 days: | 16:15 h |
| Last 24 hours: | 03 h |

### 1.5.3 Duty Air Traffic Controller (DATCO)

| | |
|---|---|
| Nationality: | Nigerian |
| Age: | 51 years |
| Licence type: | Air Traffic Controller Licence |
| Licence: | Valid till 18th April, 2022 |
| Ratings: | Aerodrome Control, Approach Control Procedural |
| Medical Certificate: | Valid till 18th February, 2021 |

During post occurrence interview, the controller stated that from his position in the TWR he observed that 5N-BOO was stationary and had not commenced the take-off roll. He then instructed 5N-BOO to hold position.

## 1.6 Aircraft information

### 1.6.1 General information

| | |
|---|---|
| Type: | BAe 125-800B |
| Manufacturer: | British Aerospace PLC, UK |
| Year of manufacture: | 1990 |
| Serial number: | 258143 |
| Certificate of Airworthiness: | Valid till 29th November 2020 |
| Certificate of Insurance: | Valid till 27th June 2021 |
| Certificate of Registration: | Issued 21st January 2014 |
| Total airframe time: | 10,160:43 h |
| Total cycles: | 9,010 |

The BAe 125-800B is equipped with two Garrett TFE731-5 series turbofan engines. It is an all-metal, low-wing monoplane with retractable tricycle landing gear, semi monocoque fuselage with cantilever wing and stabilizers. The cabin is pressurized and maintains an 8,000-foot cabin altitude at 43,000 feet above MSL. It is a two-pilot transport category airplane approved for all-weather operation.


**Figure 2:** 5N-BOO parked at Osubi apron after the incident

### 1.6.2 Powerplant

| **Engine** | **Number 1** | **Number2** |
|---|---|---|
| Manufacturer | Garrett AiResearch, USA | Garrett AiResearch, USA |
| Type/Model | TFE731-5R-1H | TFE731-5R-1H |
| Serial number | P91464 | P91465 |
| Time Since New | 10,181:09h | 10,051:40h |
| Cycles Since New | 8647 | 8204 |

Fuel Used: JetA1

### 1.6.3 Extract from Hawker 800 Aircraft Maintenance Manual

**Chapter 32-40-12 main wheel-description and operation**

**1. General**

*This detachable flange type wheel, which is for use with a tubeless tyre, is designed to accommodate a plate brake and incorporate fusible plug assemblies which release[s] nitrogen from the tyre in the event of excessive heating*.

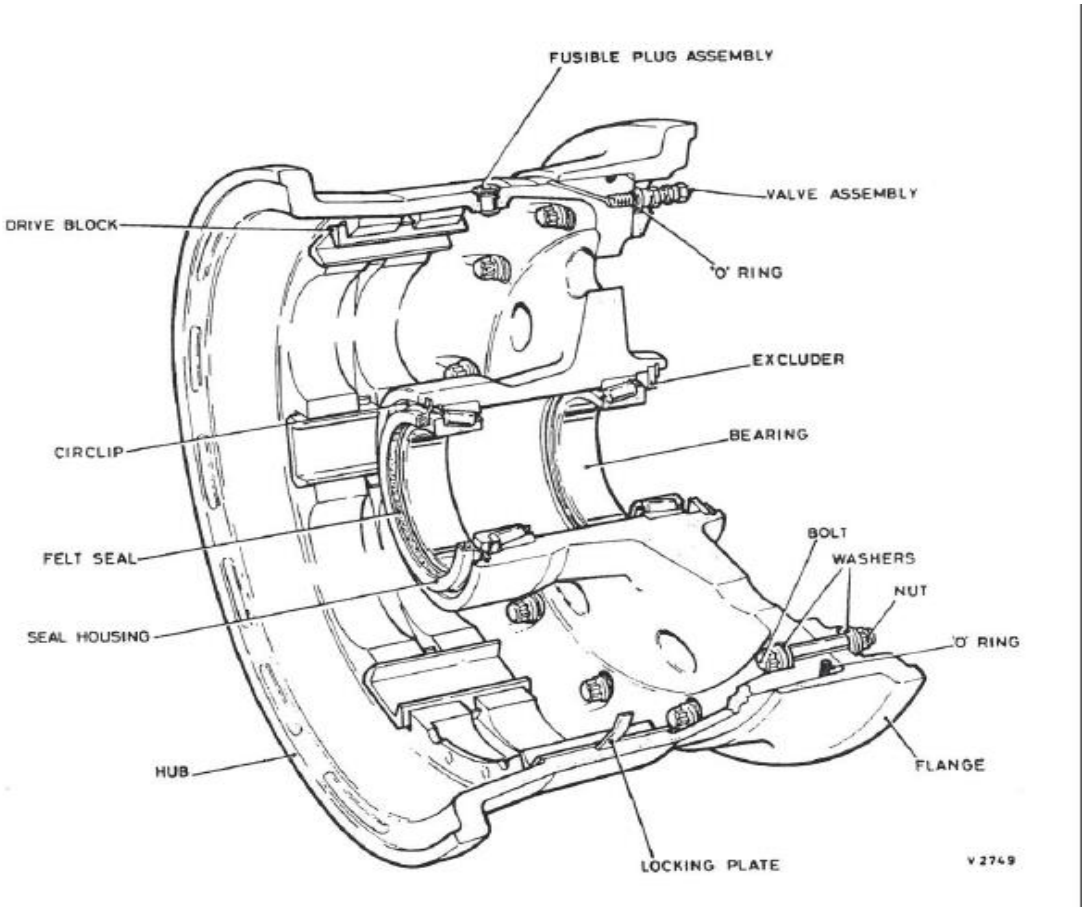


**Figure 3:** Section of the main wheel

## 2. Hub and flange

*The wheel is made in the form of a hub and flange which are bolted together, with the joint between them sealed by an O-ring.*

*The centre of the Hub is counter bored to accommodate a taper roller bearing. The bearings are protected at one end by a seal housing with a felt seal and at the other with*

*an excluder, each component being secured by a circlip.*

*Drive blocks are dovetailed into a series of integral bosses on the inner periphery of the hub and are secured by locking plates. The hub center embodies four tapped holes for securing the associated Maxaret unit drive plate.*

**3. Fusible plug assemblies**

*Fusible plug assemblies are secured into the well of the hub. Each assembly is sealed with an O-ring seal and consists of a hollow plug which houses a fusible insert, a piston and a rubber seal.*

*When excessive heating occurs the insert fuses at 177 degrees Celsius or 199 degrees Celsius (Mod.253089) and the nitrogen pressure within the tire ejects the piston and fused material from the plug.*

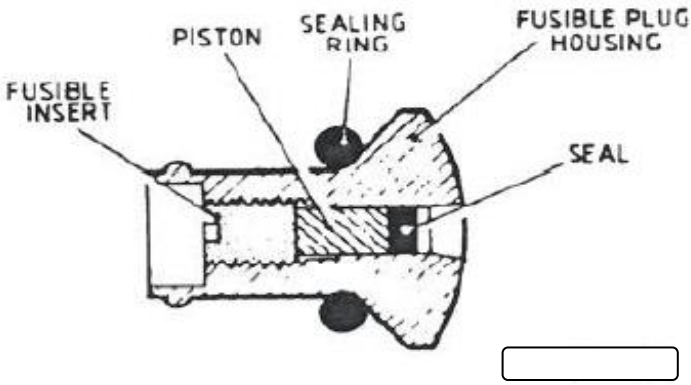


**Figure 4:** Fusible plug assembly and O-ring

## 1.7 Meteorological information

DNSU

| | |
|---|---|
| Time: | 1400Z |
| Wind: | Calm |
| Visibility: | CAVOK |
| Weather: | Nil |

Cloud: 2500ft

Temperature: 28°C

QNH: 1010 hPa

DAVIS Weather Monitor was serviceable.

Nigerian Meteorological Agency (NIMET) had no presence (infrastructure/personnel) at Osubi airstrip at the time of this occurrence.

## 1.8 Aids to navigation

The status of the navigational aids at Osubi airstrip on the day of the occurrence was as follows:

| | |
|---|---|
| NDB (Non-Directional Beacon) | -"Un-serviceable"- |
| VOR (VHF Omnidirectional Radio Range) | -"Un-serviceable"- |

## 1.9 Communication

There was two-way communication between the aircraft and air traffic control up to the time 5N-BOO received the take-off clearance. At the time the TWR instructed 5N-BOO to hold position repeatedly, the instruction was not acknowledged by 5N-BOO. Effort by the investigators to retrieve the tower audio recordings was unsuccessful as this particular incident (including reasons for non-acknowledgment by 5N-BOO) was not available with

the TWR.

The aerodrome operator, Shoreline Oil Services Limited (SOS) was in-charge and kept custody of the tower recordings which was not recorded due to power failure at the time of the occurrence.

The Shoreline Oil Services (SOS) fire station was not aware of the occurrence because the radio communication between the TWR and other stations was not monitored due to unserviceable radio sets at SOS fire station. This condition has prevailed for almost two years as corroborated by SOS fire station log book.

The status of the communication aids at Osubi airstrip on the day of the occurrence was as follows:

| | |
|---|---|
| VHF 129.100 MHZ (MAIN) | -'Serviceable'- |
| VHF 119.2MHZ (STBY) | -"Serviceable"- |
| ATC WATCH CLOCK | -"Serviceable"- |
| CRASH ALARM BELL | -"Serviceable"- |
| A/C BELL ALERTER | -"Serviceable"- |
| NAMA GSM LINE | -"Serviceable"- |
| INTERCOM (SHORELINE) | -"Serviceable"- |
| INTERCOM (CHEVRON) | -"Unserviceable"- |
| Two WALKIE TALKIE | -"Unserviceable"- |

## 1.10 Aerodrome information

Osubi airstrip (DNSU) is located 8km north-east of Warri town. It is a private airstrip operated by Shoreline Oil Services Limited (SOS). The aerodrome reference point is 05°35'53.4637"N 005°49'07.6967"E with an elevation of 27ft (8.23m) Above Mean Sea level. The aerodrome has an asphalt surface with runway orientation 06/24. The length and width of the runway are 1,800m and 30m respectively. The airport caters mostly for charter flights and helicopter operations. The hours of operations are from sunrise to sunset.

The Osubi Control Zone encompasses five other landing strips listed as follows;

(a) IA/ WA landing strip with bearing and distance 247°/7 NM

(b) WT (Topcon) landing strip with bearing and distance 260°/5 NM

(c) Army barracks helipad

(d) Naval Base Airstrip

(e) The Old Warri Airstrip (CW) with bearing and distance 227°/ 4.8 NM

During the investigation, it was revealed that helicopters operating from the above mentioned landing strips in the Osubi Control Zone usually attain a certain altitude before two-way communication with Osubi tower can be established.

NCAA conducted inspections on the status of aerodrome facilities at Osubi Airstrip on 20th June 2018, 27th November 2018, 20th May 2019, 12th November 2019 and 14th of February 2020 respectively. These inspections identified findings such as;

- The airstrip had no approved operations manual.
- Poor lighting of the runway edge lights and other required corrective actions.

These findings remained open items as at the date of this occurrence.

## 1.11 Flight recorders

The aircraft is fitted with a Solid-State Flight Data Recorder (FDR) and a Cockpit Voice Recorder (CVR) with particulars listed in the table below:

| **Recorders** | **Flight Data Recorder** | **Cockpit Voice Recorder** |
|---|---|---|
| **Manufacturer** | Fairchild Aviation Recorders, USA | Honeywell International Inc., USA |
| **Model** | F1000 | Solid State Memory Cockpit Voice Recorder |
| **Part number** | S603-1000-00 | 980-6022-011 |
| **Serial number** | 00370 | CVR120-08785 |

The FDR and CVR were retrieved and downloaded at AIB Flight Safety Laboratory Abuja, Nigeria. The FDR data could not be analysed due to the unavailability of a suitable data map. The CVR recording captured the occurrence.

### 1.11.1 Extract from CVR transcript

| CVR<br>HR:MIN:SEC.0 | UTC<br>HR:MIN:SEC.0 | SPEAKER | CONTENT |
|---|---|---|---|
| 1:55:41.0 | 14:18:18.5 | P1 | Osubi five November bravo oscar oscar |
| 1:55:45.0 | 14:18:22.5 | ATS | go ahead |
| 1:55:46.5 | 14:18:24 | P1 | requesting start destination abuja sir if possible flight level two zero zero |
| 1:55:54.4 | 14:18:31.9 | ATS | two one zero ** |
| 1:55:56.7 | 14:18:33.9 | P1 | yes am sorry two one zero |
| 1:55:58.8 | 14:18:35.1 | ATS | approve report when ready for taxi |
| 1:56:01.9 | 14:18:38.2 | P1 | call you ready for taxi bravo Oscar |
| 1:56:40.6 | 14:19:16.9 | P1 | auto start |
| 1:56:45.0 | 14:19:21.3 | P2 | auto start ** |
| 1:56:46.8 | 14:19:24.1 | P1 | bravo oscar oscar taxi |
| 1:56:49.0 | 14:19:26.3 | P2 | apu gen |
| 1:56:50.3 | 14:19:27.6 | P2 | volts and amps |
| 1:56:54.3 | 14:19:31.6 | P2 | ..... air brakes after start checks complete |
| 1:57:03.8 | 14:19:41.1 | P2 | taxi checks |
| 1:57:05.6 | 14:19:42.9 | P2 | set flaps fifteen sir |
| 1:57:07.0 | 14:19:44.3 | P1 | Fifteen |
| 1:57:50.3 | 14:20:27.6 | P1 | tower bravo oscar oscar cleared to enter back track |

| | | | |
|---|---|---|---|
| 1:57:52.6 | 14:20:29.3 | ATS | Affirm |
| 1:57:53.7 | 14:20:30.1 | P1 | thank you |
| 1:57:56.0 | 14:20:32.4 | P2 | ok aah taxi checks flap fifteen indicating anti ice is off exterior light is on taxi take-off briefing standard right seat take-off sir |
| 1:58:04.6 | 14:20:41.0 | P1 | roger aah |
| 1:58:07.8 | 14:20:43.2 | P1 | Yes |
| 1:58:08.0 | 14:20:43.4 | P2 | confirm ok |
| 1:58:09.2 | 14:20:44.6 | P2 | when we are ready to take off I will set power** |
| 1:58:16.8 | 14:20:52.2 | ATS | One zero one zero |
| 1:58:20.2 | 14:20:55.6 | P2 | If this occurs below vee one, I'll take care of ** positive rate to gear up** climb at vee two |
| 1:58:53.8 | 14:21:22.9 | P1 | No questions |
| 1:58:57.0 | 14:21:26.1 | P2 | Before take-off checks flight deck windows close harness secure** checks taxi checks complete before take-off checks brakes check instrument** altimeter is one zero one zero five zero my side apu is offline seats and harness secured windows closed |
| 1:59:25.0 | 14:21:54.1 | P1 | Zero five zero your side |

| | | | |
|---|---|---|---|
| 1:59:26.6 | 14:21:55.7 | P2 | Zero five zero |
| 1:59:37.8 | 14:22:06.9 | ATS | Bravo Oscar Oscar cleared Osubi to Abuja flight level five zero initially request level change en route |
| 1:59:45.6 | 14:22:14.7 | P2 | Omo, I no hear dis one o sir please can you say again |
| 1:59:51.2 | 14:22:20.3 | ATS | Cleared Osubi to Abuja flight level five zero request level change en route |
| 1:59:57.7 | 14:22:26.8 | P2 | Flight level five zero level change en route bravo Oscar Oscar |
| 2:00:02.4 | 14:22:31.5 | ATS | Souls on board endurance |
| 2:00:03.8 | 14:22:32.9 | P2 | Three souls all crew endurance three hours thirty minutes |
| 2:00:10.9 | 14:22:40.0 | ATS | Cleared take-off right |
| 2:00:15.3 | 14:22:44.4 | P2 | Say again |
| 2:00:17.4 | 14:22:46.5 | ATS | Cleared take-off two four right turn out |
| 2:00:20.2 | 14:22:49.7 | P2 | We're cleared take-off two four right turn out**bravo oscar Oscar |
| 2:00:48.7 | 14:23:18.2 | P1 | Line up check complete |
| 2:00:50.7 | 14:23:20.2 | P2 | Yes sir |
| 2:00:52.3 | 14:23:23.4 | P2 | ** flying controls anti ice is off engine ignition is on** flaps air brakes trims and vee speeds APR arm |

| | | | |
|---|---|---|---|
| 2:01:09.0 | 14:23:40.1 | 5N-CHO | Osubi Charlie hotel Oscar |
| 2:01:11.4 | 14:23:42.5 | ATS | Charlie hotel Oscar go ahead |
| 2:01:11.4 | 14:23:42.5 | Comment | Increased engine speed |
| 2:01:13.0 | 14:23:44.5 | 5N-CHO | Airborne whiskey alpha time** nine climbing one thousand seven hundred feet for two thousand five hundred |
| 2:01:18.2 | 14:23:49.3 | P1 | *** number one |
| 2:01:19.4 | 14:23:50.5 | ATS | Bravo Oscar Oscar hold position Bravo Oscar Oscar hold position Bravo Oscar Oscar hold position |
| 2:01:26.2 | 14:23:57.3 | 5N-CHO | Ten POB and one hour |
| 2:01:28.2 | 14:23:59.3 | ATS | Bravo Oscar Oscar hold position |
| 2:01:31.0 | 14:24:01.6 | 5N-CHO | Two way** and err crossing the Niger hotel Oscar |
| 2:01:41.0 | 14:24:11.6 | P1 | Osubi why did you ask us to abort |
| 2:01:43.8 | 14:24:14.4 | ATS | Sorry about that is err guy crossing on your right path ahead of you |
| 2:01:49.8 | 14:24:20.5 | P1 | Yeah, you could have asked him to change his err direction now we have to wait thirty minutes for brake cooling |
| 2:01:57.3 | 14:24:27.9 | ATS | Sorry about that sorry about that |

### 1.11.2 Flight Data Readout and Analysis

Gyro Air Limited could not provide the Accident Investigation Bureau, Nigeria (AIB-N) with the flight recorder documentation that will enable readout and analysis of the downloaded flight data (raw data) recordings.

## 1.12 Wreckage and impact information

Not applicable.

## 1.13 Medical and pathological information

No medical test was conducted.

## 1.14 Fire

There was no fire.

## 1.15 Survival aspect

The incident was survivable. The seats and restraints were all intact and the crew members disembarked unassisted.

## 1.16 Test and research

Not applicable.

## 1.17 Organizational and management information

### 1.17.1 Gyro Air Limited

Gyro Air Limited (GAL) is a registered airline with head office and main operational base located in Ikeja, Lagos; commenced flight operations in June 2010 and charter services in October 2016. It holds an Air Operator Certificate (AOC) with number: GAL/AOC/10-16/001 issued in accordance with the requirements of the existing Nigeria Civil Aviation Regulations (Nig.CARs). It is authorized to perform non-scheduled commercial air operations (charter flight operations), as defined in the company's operations specifications in accordance with the operations manual and the Nigeria Civil Aviation Regulations (Nig.CARs) Part 9. GAL operates a fleet of two Hawker aircraft (BAe 125-800A and BAe 125-800B).

The operations of GAL are guided by Nig.CARs, Operations Manual and the company's Standard Operating Procedures (SOP). The crew pairing on 5N-BOO complied with the provisions of GAL SOP. The GAL had a Safety Manual as at the time of this occurrence.

### 1.17.1.1 Extract from GAL STANDARD OPERATING PROCEDURES (SOP) PART B Section 7.2.1 (Rejected Take-Off)

*The aborted take-off is a statistically dangerous airplane manoeuvre. Even if successful, it may be the causal factor for other emergencies such as blown tyre , brake fires and passenger evacuation. The take-off roll shall be divided into two parts, whereas for the first part up to 80 KIAS the take-off is discontinued for any malfunction. For the second part from 80 KIAS up to V1 an abort shall only be considered for the following:*

*·Any fire or smoke*

*·Engine Failure*

*·Loss of directional control*

*·Any other malfunction that will seriously question the capability of the airplane to sustain flight.*

### 1.17.1.2 *Section 8.3.1.28.1 Brake Cooling Periods*

*Normal waiting period after braking is **5 Min.** An exception is when take-off weight exceeds the values as given in table "**Take-Off Weight vs. Brake Cooling Periods**" below, which requires a 30 Min waiting period. After a single rejected take-off, the required waiting period between completion of taxi-in from **a rejected take-off** from a speed of **90 kts or less**, and before start of taxi-out for take-off is **25 minutes.** The waiting period **increases to 45minutes** after two or more successive rejected take-offs. If the rejected take-off is made from a speed **greater than 90 kts** the brakes **must be inspected and certified** to be serviceable before next…*

**Take – off Weights vs Brake Cooling Periods**

| ***MIN BRAKE COOLING 30 MIN, IF WEIGHT EXCEEDS*** | | | | |
|---|---|---|---|---|
| ***OAT*** | ***SL*** | ***1000 FT*** | ***2000 FT*** | ***3000 FT*** |
| *-10* | *27300* | *26800* | *26300* | *25700* |
| *+0* | *26700* | *26200* | *25700* | *25200* |
| *+10* | *26200* | *25700* | *25200* | *24700* |
| *+20* | *25700* | *25200* | *24700* | *24300* |
| *+30* | *25200* | *24700* | *24300* | *23800* |
| *+40* | *24800* | *24300* | *23900* | *23100* |

### 1.17.2 Nigerian Airspace Management Agency (NAMA)

Nigerian Airspace Management Agency (NAMA) was established as a corporate body by the Act of Parliament No.48, commencement date of 29th May, 1999.

The agency provides the following under listed air navigation services:

1) Aircraft clearance;
2) Air traffic management;
3) Air navigation;
4) Charting;
5) Telecommunications;
6) Consulting;
7) Training;
8) Flight planning and NOTAM promulgation; etc.

NAMA is responsible for providing air navigation services at Osubi airstrip.

### 1.17.2.1 EXTRACT FROM AIR TRAFFIC MANAGEMENT (ATM) MANUAL OF OPERATIONS (VOLUME ONE SECOND EDITION FEBRUARY, 2016)

### 1.2 INTRODUCTION

*1.2.1 Radio Telephony (RT) provides the means by which pilots and personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. On the other hand, THE USE OF NON STANDARD PROCEDURES AND PHRASEOLOGY CAN CAUSE MISUNDERSTANDING. Incidence and accidents have occurred in which a contributing factor has been the MISUNDERSTANDING CAUSED BY THE USE OF POOR PHRASEOLOGY. The importance of using correct and precise standard phraseology cannot be over emphasized.*

*1.2.2 These phraseologies are not intended to be exhaustive, and when circumstances differ, pilots, ATC personnel and other ground personnel would be expected to use appropriate subsidiary phraseologies which should be as CLEAR and CONCISE as possible and designed to avoid possible confusion by those persons using a language other than one of their national languages.*

*1.2.3 All phraseologies SHALL BE USED IN CONJUNCTION WITH RT IDENTIFICATION, (aircraft, ground vehicle, ATC or others) as appropriate.*

*1.2.4 FULL radio telephony identification shall ALWAYS be used when establishing communication. An aircraft shall use its ABBREVIATED RCF IDENT ONLY AFTER it has been ADRESSED in this manner by the AERONAUTICAL STATION.*

*1.2.5 EXCEPT FOR REASONS OF SAFETY, NO TRANSMISSION SHALL BE DIRECTED TO*

*AN AIRCRAFT*

*1. DURING TAKEOFF*

*2. DURING THE LAST PART OF THE FINAL APPROACH OR*

*3. DURING THE LANDING ROLL*

***TRANSMITTING TECHNIQUES***

*The following transmitting techniques will assist in ensuring that transmitted speech is clearly and satisfactorily received*

***THE 10 COMMANDMENTS***

1. *Before transmitting, LISTEN OUT on the frequency to be used to ENSURE that there will be NO interference with a transmission in another station.*
2. *Be familiar with GOOD MICROPHONE operating TECHNIQUES.*
3. *Place microphone directly in FRONT of the mouth and as CLOSE as possible*
4. *When using hand held or desk microphone DO NOT TURN AWAY while transmitting*
5. *USE NORMAL conversational TONE, speak CLEARLY and DISTINCTLY.*
6. *MAINTAIN an EVEN RATE OF SPEECH not exceeding 100 words per minute. When it is known that elements of the message will be written down by the recipient speak at a slower rate.*
7. *Maintain the speaking VOLUME at a CONSTANT LEVEL.*
8. *A slight pause before and after numbers will assist in making them easier to understand.*

*9. AVOID HESITATING SOUND such as "err umhhhahhh etc"*

*10. DEPRESS the transmit switch FULLY BEFORE SPEAKING and DO NOT RELEASE it until message is completed. This will ensure that the entire message is transmitted. CLIPPED TRANSMISSION CAN PROVE DANGEROUS.*

### 1.17.2.2 Extract from Local Air Traffic Control Instructions (LATCI) Manual

***SECTION 14.1.56***

*14.1.56.1The holder of an air traffic services provider certificate shall provide each air traffic services unit listed in its Manual of Operations, a local air traffic control manual which:*

*(a) Sets out the procedures for the operation of the air traffic services unit concerned; and*

*(b) Contains the information as prescribed in the Requirements of these Regulations. For contents of LATCI see IS 14.1.56.1.*

*14.1.56.2. The local air traffic control instructions manual shall not be seen in isolation but rather as the document necessary to provide the interface between peculiarities of a particular unit and the various source documents, and does not relieve air traffic service personnel from the responsibility of being familiar with and the application of procedures laid down in the following documents:*

*(a) Aeronautical Information Publication, AIP supplements, AIC and NOTAMs;*

*(b) Civil Aviation Act 2006;*

*(c) Nigeria Civil Aviation Regulations;*

*(d) Manual of Standards; and*

*(e) Relevant ATM documents.*

### 1.17.3 Nigerian Civil Aviation Authority (NCAA)

Nigerian Civil Aviation Authority (NCAA) was established by decree 49 of 1999, with among others, the statutory responsibilities of ensuring regulating, monitoring and promotion of the safety, security, economic and reliability of air navigation oversight in line with International Civil Aviation Organization (ICAO) Standard and Recommended Practices (SARPs). The Authority effectively commenced operations on 1st January, 2000.

**Extracts from the Nig. CARs 2015 part 7.**

*Continued Serviceability and Inspection of Flight Recorder Systems*

*7.8.1.4—(a) The operator shall conduct operational checks and evaluations of recordings from the flight recorder systems to ensure the continued serviceability of the recorders. (b) The procedures for the inspections of the flight recorder systems are given in IS 7.8.1.4.*

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*IS : 7.8.1.4—(a) The operator shall, prior to the first flight of the day, monitor the built-in test features for the flight recorders and flight data acquisition unit (FDAU), when installed, by monitored by manual and/or automatic checks. (b) The operator shall carry out annual inspections as follows:*

*(1) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;*

*....*

*(3) a complete flight from the FDR shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;*

*....*

*(5) an annual examination of the recorded signal on the CVR shall be carried out by replay of the CVR recording. While installed in the aircraft, the CVR shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;*

*....*

*(c) Flight recorder systems shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory parameters is not recorded correctly.*

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*Flight Recorder Electronic Documentation.*

*7.8.1.5—(a) Operators shall provide to [accident investigation authorities] the documentation of flight recording systems parameters in electronic format and in accordance with [industry specifications].*

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## Extract from Nig. CARs 2015 Part 12

*12.1.14 states that "no person shall operate an aerodrome in Nigeria specified in section 12.3.1 for take-off and landing of aero planes unless such a person is a holder of an Aerodrome Certificate granted by the Authority under these Regulations ".*

## Extract from Nig. CARs 2015 Part 14

*Section 14.1.37. An application for the provision of Air Traffic Services shall include the agreement between the applicant and an Aeronautical Meteorological Service Provider for the provision of Aeronautical Meteorology services. The agreement shall specify the criteria for special observations and reports and the duplication of meteorological indicators concurrently in the meteorological office and the Control Tower. The agreement shall also include that the calibration of meteorological equipment used by the Air Traffic Services Provider will be in accordance with these regulations.*

*Section 14.1.47.1 states that an ATS provider shall develop and maintain contingency plans for implementation in the event of disruption or potential disruption of air traffic services and related support in the airspace for which it is responsible.*

Section 14.1.52.3. *The ATS provider shall demonstrate that there is a system in place to record and retain operational data.*

## Extract from Nig. CARs 2015 Part 20

*Section 20.3.1. SAFETY MANAGEMENT SYSTEM*

*20.3.1.3. The SMS of a certified operator of aeroplanes or helicopters authorized to conduct commercial air transport, in accordance with Part 9 of these Regulations, shall be made acceptable to the Authority, as applicable.*

*20.3.1.8. The SMS of an operator of a certified aerodrome, in accordance with Part 12 of these Regulations, shall be made acceptable to the Authority.*

### 1.17.4 The Aerodrome Operator Shoreline Oil Services Limited (SOS)

SOS started as Shoreline Dredging & Oil Services Limited (SDOSL), a leading indigenous dredging company wholly owned by Nigerians. It was incorporated in 1989 as a private limited liability company. Shoreline was a subsidiary of Commet Finance and Security Limited (CF&SL) and is registered with the Department of Petroleum Resources to operate as a dredging and oil service company. Shoreline Oil Services (SOS) Limited acquired Osubi airstrip on 01 May, 2015 from Shell Petroleum Development Company (SPDC), Total E&P Nig. Limited (TEPNG) and Nigeria Agip Oil Services Limited. SOS assumed the role of operating partner for Osubi airstrip from 01 May, 2015 and since that date assumed responsibilities for the management and maintenance of Osubi airstrip. SPDC, TEPNG and Nigeria Agip Oil Services transferred the Operations Permit after NCAA consent granted on 01 November 2015. The Operations Permit for SOS was transmitted by NCAA/OPS/095/VOL.V/441 dated 02 November, 2015 for a 3-month period from 01 November 2015 to 30 January 2016 to enable the holder SOS to close all the open items

and facilitate the process for certification of the airstrip in line with Nig. CARs Part 12.

Following a directive on 07 February, 2020 conveyed to SOS by NCAA/OPS/095/IV/557 dated 03 March 2020, the Operations Permit issued to SOS was withdrawn.

## 1.18 Additional information

### 1.18.1 Extracts from procedures for Air Navigation service (Air Traffic Management) ICAO Doc 4444 ATM/501

***Chapter 12 phraseologies section 12.34.11 Take-Off Clearance***

*……..To cancel a take-off clearance*

*e) Hold position, cancel take-off I say again cancel take-off (reasons)*

**f) Holding;*

*……..To stop a take-off after an aircraft has commenced take-off roll*

*g) Stop immediately (repeat aircraft call sign) STOP IMMEDIATELY;*

**h) STOPPING.*

### 1.18.2 Extract from Annex 14 — Aerodromes Volume 1, chapter 9 (AERODROME OPERATIONAL SERVICES, EQUIPMENT AND INSTALLATIONS) Communication and alerting systems

9.2.31 **Recommendation.—** *A discrete communication system should be provided linking a fire station with the control tower, any other fire station on the aerodrome and the rescue and fire fighting vehicles.*

9.2.32 **Recommendation.—** *An alerting system for rescue and firefighting personnel, capable of being operated from that station, should be provided at a fire station, any other fire station on the aerodrome and the aerodrome control tower.*

# 2.0 ANALYSIS

## 2.1 General

The aircraft had a valid Certificate of Airworthiness with no deferred defect entries in the Technical log.

The crew members were certified and qualified to conduct the flight.
This analysis focuses on the following areas: Communication procedure and phraseology, air traffic management, the aborted take-off, handling of tower recordings, safety gaps at Osubi airstrip, and the flight recorder documentation.

## 2.2 Communication procedure and phraseology

During taxi, Osubi Tower (TWR) issued ATC departure clearance to 5N-BOO for initial climb to FL050 and to request level change en route.

TWR subsequently cleared 5N-BOO for take-off RWY 24 with instruction to turn right after take-off. 5N-BOO read back the clearance and TWR confirmed it as correct.

At 15:22:32 h, the flight crew completed the BEFORE TAKE-OFF checks.

At 15:23:18 h, the flight crew completed the LINE-UP checks and while advancing the thrust levers for take-off roll; TWR interrupted the ongoing radio transmission being passed to it by 5N-CHO and called out three times, *Bravo Oscar Oscar hold position.* Oblivious of the TWR interruption, 5N-CHO continued transmitting its traffic information simultaneously until the message was completed.

The message "Hold position" was heard by the crew of 5N-BOO when they had already commenced the take-off roll which is corroborated by the CVR. It is very likely that the initial call(s) to hold position may not have been heard by the crew of 5N-BOO. This could be due to the interruption and distortion of the on-going radio transmission between 5N-CHO and the TWR.

In Accordance with Air Traffic Management Doc 4444 ATM/501, TWR could have cancelled the take-off clearance using the phraseology *Hold position, cancel take-off i say again cancel take-off (reasons)*. Alternatively, TWR could have stopped the aircraft using the phraseology *Stop immediately (repeat aircraft call sign) STOP IMMEDIATELY*. When the reason is stated, 5N-BOO will be informed of the impending conflicting traffic on the take-off path. However, none of these procedures and phraseologies were adopted.

Furthermore, the first commandment of radio telephony procedure which states that; *before transmitting, LISTEN OUT on the frequency to be used to ENSURE that there will be NO interference with a transmission by another station.* An on-going transmission by 5N-CHO was interrupted without respecting the first commandment.

This resulted in a distorted transmission *which can prove dangerous* in accordance with the tenth commandment of RT procedure.

## 2.3 Air traffic management

The flight crew of 5N-BOO lined-up the aircraft, briefed for a short field take-off procedure, accomplished the BEFORE TAKE-OFF checks, commenced the take-off, and TWR then called 5N-BOO to hold position.

The controller stated that from his position in the TWR he observed that the aircraft was stationary and had not commenced the take-off roll.

The CVR download corroborated the crew statement that the take-off was initiated prior to the TWR's call for 5N-BOO to hold position.

5N-BOO was instructed to hold position when take-off roll had commenced. 5N-CHO should have been instructed to execute a hold[1] maintaining altitude 2500ft to keep clear of the extended runway centreline. After 5N-BOO must have departed and climbed above 3500ft (for standard altitude separation[2]), 5N-CHO can then be given clearance to cross the extended centreline of runway 24. It is easier to manoeuvre the helicopter (5N-CHO) which is already airborne while 5N-BOO should have been instructed to maintain runway heading after take-off until passing 3500ft on QNH before turning right on course. Instead of instructing 5N-BOO to abort at a critical phase of flight (short field take-off roll), any of the afore-mentioned air traffic management options could have been employed.

## 2.4 The rejected take-off

According to the flight crew of 5N-BOO, during the take-off roll at a speed of 86 knots the rejected take-off was initiated, and maximum braking was applied as recommended by Gyro Air Limited (GAL) Standard Operating Procedures (SOP), section **7.2.1 (Rejected take-off).**

[1] Hold- a racetrack orbit to keep an aircraft within a specific airspace while awaiting further clearance.
[2] Vertical separation minima is 1000ft between aircraft from Mean Sea Level up-to FL290 based on standard altimeter setting of 29.9 inches of mercury (in Hg) or 1013.2 millibars (hPa). The interval is 2000ft above FL290 in non-Reduced Vertical Separation Minimal (RVSM) airspace and only 1000ft in RVSM airspace at all levels.

After the rejected take-off, the crew taxied back to the apron to await the stipulated brake cooling time but discovered that the left main wheel tyre (No.1 and No.2) had deflated. The investigation revealed that, the very high thermal load imposed by the maximum braking action during the rejected take-off, might have caused the temperature in the wheel assembly to rise to 177°C or 199°C which led to the melting of the fusible plugs. This excessive heat causes the nitrogen pressure within the tyre to eject the piston and fused material from the plug. The fusible plugs are installed as a safety mechanism to avert a high-speed tyre burst that can lead to loss of directional control and runway excursion.

## 2.5 Handling of tower recordings

During this investigation, efforts to retrieve the tower audio recordings were unsuccessful as this particular incident was not recorded due to power failure prior to the occurrence. The Nig. CARs 2015 section 14.1.52.3 states that; *the ATS provider shall demonstrate that there is a system in place to record and retain operational data*. Also, section 14.1.47.1 states *that an ATS provider shall develop and maintain contingency plans for implementation in the event of disruption or potential disruption of air traffic services and related support in the airspace for which it is responsible.*

Investigation found out that Shoreline Oil Services, being the aerodrome operator, oversaw the recording and retention of TWR recordings and also the provision/management of electrical power supply to the tower at Osubi airstrip. There was no observed contingency plan by the ATS provider. The Nigerian Airspace

Management Agency (NAMA), being the ATS provider should have been in charge of the recordings in accordance with Nig.CARs Section 14.1.52.3. However, this is not the case at Osubi airstrip.

Furthermore, the investigation established that at the time of the occurrence, Shoreline Oil Services fire station was not aware of the incident because the radio communication between the TWR and other stations was not monitored due to un-serviceability of the fire station radio sets.

According to Annex 14 — Aerodromes Volume 1, Communication and alerting systems section 9.2.3.1 recommends that; *a discrete communication system should be provided linking a fire station with the control tower, any other fire station on the aerodrome and the rescue and fire fighting vehicles.* This would have allowed monitoring of communications between the tower, aircraft, and other stations especially in cases of emergency. However, this was not the case at Osubi aerodrome.

## 2.6 Safety gaps at Osubi airstrip

An Operations Permit vide NCAA/OPS/095/VOL.V/441 issued to SOS was transferred from SPDC, Total E&P Nigeria Limited (TEPNG) and Nigeria Agip Oil Services Limited on 02 November 2015 with effective date of 01 November 2015 to SOS. The Nigerian Civil Aviation Authority (NCAA) granted a 3-month Permit to SOS (from 01 November 2015 to 30 January 2016) to enable the holder SOS close all the open items and facilitate the process for certification of the airstrip in line with Nig. CARs Part 12.

NCAA conducted inspections on the status of aerodrome facilities at Osubi Airstrip on 20th June 2018, 27th November 2018, 20th May 2019, 12th November 2019 and 14th of February 2020 respectively. These inspections identified corrective actions to be taken by SOS at Osubi airstrip.

The Bureau observed that several notifications of corrective actions were issued by NCAA to the Operator (SOS) for implementation. Some of these corrective actions included but not limited to:

- The airstrip had no operations manual.
- Poor lighting of the runway edge lights and other required corrective actions.

The investigation revealed that there was no record showing SOS had carried out these corrective actions necessary to close the NCAA findings. SOS did not provide any relevant manual of its own but rather submitted manuals of SPDC. Furthermore, the Operations Permit held by SOS has not been revalidated as at the time of this occurrence. Consequent upon the series of observed open items constituting serious safety concerns not addressed by SOS, a directive was issued on 07 February 2020 disengaging SOS as the operator of Osubi airstrip. This was conveyed by NCAA/OPS/IV/557 dated 03 March, 2020. A system was put in place to ensure continuous operation of the airstrip pending the appointment of a competent operator. SOS was still managing and operating Osubi airstrip despite the withdrawal of its Operating Permit and no competent operator that should have been managing and operating the airstrip for continuous operation was on ground as at the time of this occurrence.

## 2.7 The flight recorder documentation

Nig. CARs 7.8.1.5—(a) states that *Operators shall provide to [accident investigation authorities] the documentation of flight recording systems parameters in electronic format and in accordance with [industry specifications].* However, due to non-availability of the FDR documentation, the investigation could not interpret the raw data that was downloaded from the FDR as such information on the various speeds attained by the aircraft before the abort was not available. Also access to the FDR information would have provided the temperature attained before the No. 1 and No. 2 tyres deflated.

Further enquiries suggest that this documentation was not kept and maintained by Gyro Air Limited (GAL). It should be noted that the aircraft manufacturer provides the initial documentation to the first owner/operator. Modifications to flight recorder system may be made during the service life of the aircraft for operational purposes or to meet regulatory changes. As such, the aircraft owner/operator is required, as stated earlier, to keep a copy of the documentation and amended as needed.

# 3.0 CONCLUSIONS

## 3.1 Findings

1. The flight crew was certified to conduct the flight.
2. The aircraft had a valid Certificate of Airworthiness.
3. An AgustaWestland AW139 helicopter with registration marks 5N-CHO called Osubi tower and reported airborne Whiskey Alpha helipad while 5N-BOO was on the take-off roll.
4. TWR transmitted "hold position" instruction to 5N-BOO when 5N-CHO was still passing its traffic information and 5N-BOO had commenced the take-off roll.
5. 5N-BOO rejected the take-off and came to a stop at a distance of 1,164.45 m from the threshold of RWY 24.
6. When the aircraft came to a stop, the No.1 and No.2 left main wheel tyres were deflated.
7. Nigerian Meteorological Agency (NIMET) had no presence (infrastructure /personnel) at Osubi airstrip at the time of this occurrence as required by Nig. CARs 2015 Part 14 Section 14.1.3.
8. Osubi airstrip was acquired from Shell Petroleum Development Company (SPDC), Total E&P Nigeria Limited and Nigerian Agip Oil Services Limited in 2015 by Shoreline Oil Services Limited (SOS).
9. Osubi airstrip is operated and managed by SOS which also keep custody of the ATC tower recordings.
10. SOS had no approved operations manual.
11. SOS fire station radio set has been un-serviceable for almost two years as at the time of the occurrence.

12. SOS fire station was unable to monitor radio communication between the TWR and other stations and was not aware of the occurrence.

13. Tower communication with 5N-BOO was not recorded due to power failure.

14. 5N-CHO made initial contact with Osubi TWR while climbing out of 1700 ft for 2500 ft.

15. SOS had no effective contingency plan to manage power disruption at Osubi Aerodrome.

16. Tower does not have control over the recording and retention of radio communication at Osubi airstrip as required by Nig. CARs 2015 Part 14.1.52.3.

17. NCAA conducted audit inspections on the status of aerodrome facilities at Osubi Airstrip on 20th June 2018, 27th November 2018, 20th May 2019, 12th November 2019, and 14th of February 2020 respectively and there was no evidence of closeout of the open items.

18. Following a directive on 07 February, 2020 conveyed to SOS by NCAA/OPS/095/IV/557 dated 03 March 2020, the Operations Permit issued to SOS was withdrawn.

19. Gyro Air Limited did not provide an approved flight recorder documentation.

## 3.2 Causal factor

Aborted short field take-off that necessitated the use of maximum braking which led to deflation of the left main wheel tyres (no.1 and no.2) due to lack of effective communication between the Air Traffic Control (ATC) and 5N-BOO.

## 3.3 Contributory factors

1. Non-compliance with NCAA audit directives by Shoreline Oil Services Limited.
2. The absence of an established procedure to contain local traffic operating around Osubi airstrip.

# 4.0 SAFETY RECOMMENDATIONS

## 4.1 Safety Recommendation 2022-005

Nigerian Civil Aviation Authority (NCAA) should ensure that Shoreline Oil Services Limited close-out open items in the audit findings.

## 4.2 Safety Recommendation 2022-006

Nigerian Civil Aviation Authority (NCAA) should ensure that all aircraft operating around the Osubi control zone coordinate and communicate operations with Osubi Tower before lift-off.

## 4.3 Safety Recommendation 2022-007

Nigerian Civil Aviation Authority (NCAA) should ensure that Shoreline Oil Services Limited establishes and implements a Safety Management System for Osubi airstrip as required by Nig. CARs 20.3.1.8.

### 4.4 Safety Recommendation 2022-008

Nigerian Civil Aviation Authority (NCAA) should ensure that all operators comply with Nig. CARs 7.8.1.5—(a) regarding handling and operations of flight recorders, including obtaining the documentation of the Flight recording systems installed on their fleet of aircraft.

### 4.5 Safety Recommendation 2022-009

Nigerian Civil Aviation Authority (NCAA) should ensure competent management and operations at Osubi airstrip pending the revalidation of the Operating Permit of Shoreline Oil Services Limited.

### 4.6 Safety Recommendation 2022-010

Nigerian Airspace Management Agency (NAMA) should assume the responsibility in accordance with Nig. CARs 2015 section 14.1.52.3 for ATC recordings and retention of transcripts at Osubi airstrip.

### 4.7 Safety Recommendation 2022-011

Nigerian Airspace Management Agency (NAMA) should establish procedure to contain local traffic operating around Osubi airstrip.

## 4.8 Safety Recommendation 2022-012

Shoreline Oil Services Limited (SOS) should ensure that an effective contingency plan is put in place to contain power disruptions at Osubi airstrip.