

PRELIMINARY REPORT ON THE ACCIDENT INVOLVING A BOEING 737-300 AIRCRAFT WITH NATIONALITY AND REGISTRATION MARKS 5N-BQO OWNED AND OPERATED BY AIR PEACE LIMITED WHICH OCCURED ON RUNWAY 18R MURTALA MUHAMMED INTERNATIONAL AIRPORT ON 23RD JULY, 2019

Registered Owner and Operator:	Air Peace Limited
Aircraft Type and Model:	Boeing 737-300
Manufacturer:	Boeing Aircraft Company, USA
Date of Manufacture:	28th April, 1998
Nationality and Registration Marks:	5N-BQO
Serial Number:	28571
Location:	Runway 18R
Date and Time:	23rd of July, 2019 at about 11:28 h

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

INTRODUCTION

Accident Investigation Bureau (AIB) was notified of the accident by the Nigerian Civil Aviation Authority (NCAA) on 23rd July, 2019; the day of the occurrence. Investigators were dispatched to the scene same day to commence post occurrence assessments, under the provisions of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2019 and International Civil Aviation (ICAO) Annex 13. All other relevant stakeholders were notified.

The purpose of this preliminary report is to provide details of the initial facts, discussions and findings surrounding the occurrence; it includes information gathered from witness

statements, flight recorders, Air Traffic Control (ATC) reports, weather reports, and preliminary inspection of the accident scene and wreckage.

The investigation is ongoing.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On the 23rd of July 2019, at about 10:38 h; a Boeing 737-300 aircraft with nationality and registration marks 5N-BQO owned and operated by Air Peace Limited departed Port Harcourt International Airport (DNPO), Port Harcourt as flight APK7191 for Murtala Muhammed International Airport (DNMM) Lagos. It was a scheduled flight, operating on an Instrument Flight Rules (IFR) flight plan with six (6) crew members and one hundred and thirty-three (133) passengers. The First Officer was the Pilot Flying (PF) while the Captain was the Pilot Monitoring (PM). The aircraft landed on the nose gear causing the nose wheel to break off on landing runway 18R, at Murtala Muhammed Airport, Ikeja, Lagos.

The flight crew stated that on resumption of duty on the day of the occurrence, and after pre-flight inspection on the aircraft 5N-BQO; they had earlier flown two sectors which were uneventful. On the first leg into Lagos (i.e. ABV-LOS), the crew experienced heavy rain during approach and landing but they landed the aircraft safely. The third sector of the day, flight APK7191 which was airborne at 10:38 h from Port Harcourt to Lagos was the accident flight.

The flight crew reported that APK7191 was initially cleared to LAG to expect runway 18L but due to low visibility, was later re-cleared to runway 18R. On approach to Lagos, the weather was monitored on Automated Terminal Information Service (ATIS) frequency.

According to ATC report, at 11:14:41 h; APK7191 on approach was assigned a radar heading 270° for runway 18R maintaining FL050. At 11:16 h, APK7191 was re-cleared 3,500 ft on QNH 1016.

At 11:18:58 h, APK7191 was given radar vectors for ILS Approach Runway 18R which was acknowledged by the flight crew. At 11 NM to touchdown, Approach Radar transferred the aircraft to Control Tower (CT) for final landing clearance.

At 11:23:00 h, APK7191 contacted CT and reported distance and position for runway 18R which the CT acknowledged and informed APK7191 of the preceding aircraft which was crossing the threshold of runway 18R and the crew acknowledged.

At 11:26:12 h, the CT gave APK7191 final landing clearance as "APK7191 exercise caution, runway surface is wet, wind 290°/06 kt runway 18R cleared to land". The crew responded as follows: "cleared to land runway 18R APK7191".

At about 500 ft, the wiper was selected to HIGH position by the PM due to intensity of the rain, who also reported field in sight with affirmation from the PF. At 100 ft above ground level (AGL), auto pilot was disengaged by the PF.

According to the Captain, during the callouts: 50, 30, the PM noticed that the aircraft was not aligned with the centre line of the runway, and took control, after announcing "I have controls" and "corrected back on the centreline". The crew stated that, "...the right wheels touched down, simultaneously, we lost visibility and nose wheel touched down... We heard a loud screeching noise and metals grinding, we also saw a lot of debris flying around".

At 11:28:10 h, CT advised an aircraft on approach, GHN110, to execute a go-around due to the presence of APK7191 on the runway.

At 11:28:33 h, CT transmitted the landing time to APK7191 and requested intention from the flight crew.

At 11:28:43 h, APK7191 contacted CT and requested for tow truck for towing and CT requested reason for the towing.

At 11:30:51 h, APK7191 responded that they have "a gear collapse" and CT responded by saying that the appropriate authority has been advised.

At 11:40:11 h, CT advised APK7191 that the tow truck is already on its way and would be with them shortly.

At 11:45:33 h, APK7191 stated “we request to disembark from here, you will help us coordinate with NAHCO would call our operations to make available bus. Is that possible?” CT responded, “we will inform Apron control to make all the necessary arrangements.”

At 11:49:35 h, CT said, “we have informed Apron Control they are making arrangement for passengers to be discharged and conveyed.”

The conveyance vehicle and the moveable passengers’ stairs arrived shortly afterwards. The passengers disembarked the aircraft using moveable passengers’ stairs on the main cabin door (L2) while the crew awaited the authorities.

The Aerodrome Rescue and Fire-fighting Services (ARFFS) personnel were present at the scene.

On arrival at the scene of the accident, the investigators found that the engines were shutdown but the Auxiliary Power Unit (APU) was still running.

The accident occurred at 11:28 h in daylight and rain.

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	6	133	139	Nil
Total	6	133	139	Nil

1.3 Damage to Aircraft

The aircraft was substantially damaged.

1.4 Other Damage

The asphalt and concrete runway was damaged due to impact forces, with deep holes made by the nose wheel shock strut. Also, electrical lines and light on runway were damaged. See the figure below:



Figure 1: Photo showing witness mark and damage to runway lighting

1.5 Personnel Information

1.5.1 Captain

Nationality:	Nigerian
Gender:	Female
Age:	32 years
License Type:	ATPL (A)
License Validity:	5th August, 2023
Aircraft Ratings:	B737-300/500
Medical Validity:	22nd April, 2020
Simulator Validity:	14th October, 2019
Total Flying Time:	5,100 h
Total on Type:	4,900 h
Total on Type (PIC):	1,200 h
Last 90 Days:	180 h
Last 28 Days:	60 h
Last 24 Hours:	9 h

1.5.2 First Officer

Nationality:	Nigerian
Gender:	Male
Age:	31 years
License Type:	CPL (A)
License Validity:	20th October, 2020
Aircraft Ratings:	B737-300/500
Medical Validity:	6th January, 2020
Simulator Validity:	12th January, 2020
Total Flight Time:	1,090 h

Total on Type:	850 h
Last 90 Days:	140 h
Last 28 Days:	20 h
Last 24 Hours:	03 h

1.6 Aircraft Information

1.6.1 General Information

Type:	Boeing 737-300
Manufacturer:	Boeing Aircraft Company, USA
Owner/Operator:	Air Peace Limited
Airframe time:	45,452:50 h
Cycles since new:	31,643
Serial Number:	28571
Category:	Transport
Year of Manufacture:	1998
C of A Validity:	10th September, 2020
Certificate of Insurance:	30th September 2019
Certificate of Registration:	19th May, 2015
Noise Certificate:	11th November, 2013



Figure 2: Photo showing the aircraft where it stopped on the runway

1.6.1 Engines

Engine Model: CFM 56-3C-1

	<u>No. 1</u>	<u>No. 2</u>
Serial No:	858489	724457
Time Since New:	41,060:45 h	50,648:01 h
Cycles Since New:	30,503	33,559
Year of Manufacture:	1989	1989

Type of Fuel used is Jet A1

1.7 Meteorological Information

The weather report obtained from the Nigerian Meteorological Agency (NiMET).

Time: 1000 UTC

Wind: 290 /04 KTS

Visibility: 3000 m

Weather: Rain

Cloud: BKN 270 m/Few 540 CB

Temp/Dew point: 25/24°C

Tempo: 5000 m TSRA

QNH: 1016 hPa

Time: 1030 UTC

Wind: 290/06 KTS

Visibility: 1500 m

Weather: Rain

Cloud: BKN 240 m

Temp/Dew point: 24/24°C

Tempo: Nil

QNH: 1016 hPa

The weather forecast report from the ATIS;

Time: 1011 UTC

Wind: 290/04 KTS

Visibility: 1500 m
Weather: BKN 009
Cloud: Nil
Temp//Dew point: 24/24°C
Tempo: 800 m TSRA
QNH: 1016 hPa

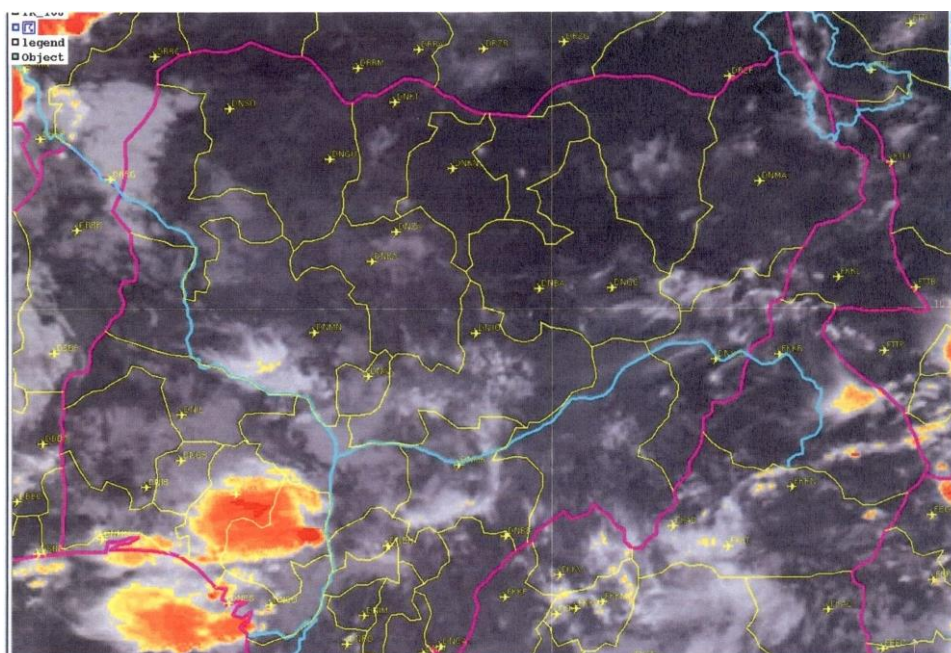


Figure 3: Satellite imagery for Southern Nigeria at 1000 UTC

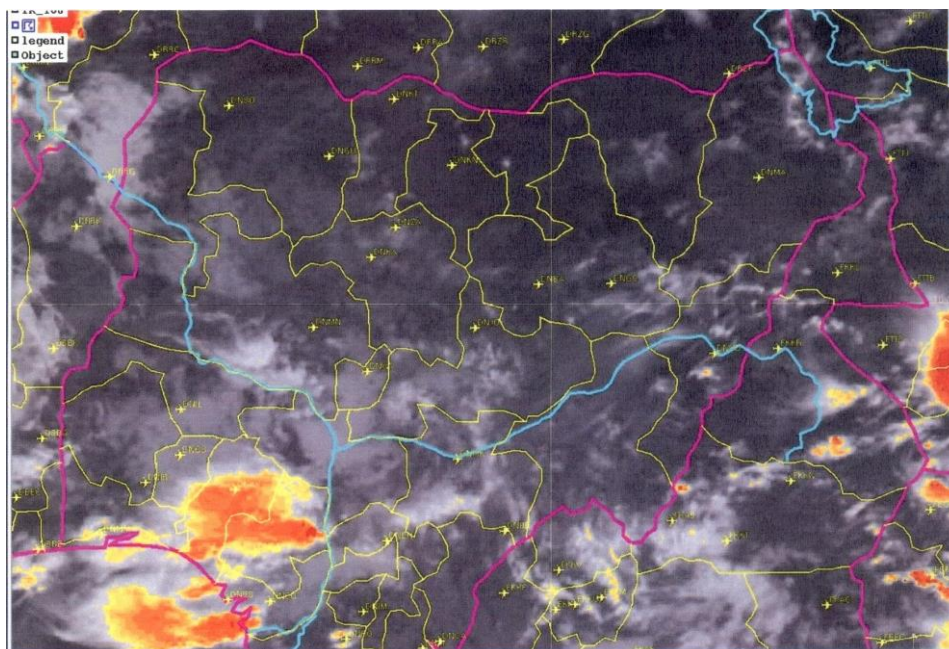


Figure 4: Satellite imagery for Southern Nigeria at 1030 UTC

1.8 Aids to Navigation

The ILS on both runways and VOR/DME (LAG) at the time of the occurrence were serviceable.

1.9 Communications

There was effective communication between the aircraft and the Control Tower. The status of the equipment on the day of the accident was as follows:

Lagos Radar VHF 124.7 Control: Serviceable

Lagos Control Tower VHF 118.1: Serviceable

1.10 Aerodrome Information

Murtala Muhammed International Airport, Lagos was the destination airfield where the incident occurred. The aerodrome has two parallel runways 18L/36R and 18R/36L serving both the international and the domestic wings of the airport with standard equipment.

The airport elevation is 135 ft and runway length of 18L/36R is 9,006 ft (2,745 m) while 18R/36L is 12,795 ft (3,900 m).

ATC, weather and the Fire services were readily available to the airport users.

1.11 Flight Recorders

The aircraft is fitted with Flight Data Recorder (FDR) and a Cockpit Voice Recorder (CVR).

1.11.1 Flight Data Recorder

Manufacturer:	Honeywell
Part No.:	980-4700-003
Serial No.:	08657

1.11.2 Cockpit Voice Recorder

Manufacturer:	Honeywell
Part No.:	980-6022-001
Serial No.:	09263

AIB downloaded the data of flight recorders and carried out the analysis at AIB Flight Safety Laboratory. The recordings of the occurrence on the CVR were found overwritten.

1.11.3 Excerpts from Air Peace Limited Operations Manual (OM Part A, Section 11.4.3)

Preservation of Recordings

Nig.CARs 8.5.1.24 (b)(c); IS: 9.2.2.5

Following an accident or significant incident where the aeroplane will not continue flying, the Commander should consider tripping the Cockpit Voice Recorder (CVR) circuit breaker to preserve the recording at the end of the flight. If the aeroplane is to be electrically de-powered immediately, and remains de-powered, then tripping the CB is not necessary.

This procedure is particularly important when an incident is known or suspected to have occurred during the approach and landing phase of the flight, or when there is known crew/ATC interaction issues. Where there is any doubt about the value of the CVR recording, the CB should be tripped in the first instance and advice sought from the DFO as soon as practicable and before further flight on that aeroplane.

Unless prior permission has been granted by the Authority following an accident or incident that is subject to mandatory reporting the Company shall, to the extent possible, preserve the original recorded data pertaining to the accident or incident, as retained by the recorder for a period of 60 days or longer if directed by the investigating Authority.

1.12 Wreckage and Impact information

The aircraft was found at a distance of 2,491 m from the runway threshold, at a point 18 m left of the runway centreline.

The two wheel assemblies of the nose landing gear were found detached from the axle; the flange of one-half of the right nose wheel assembly was found on the runway, 971 m from the threshold. The left nose wheel assembly was found intact on the grass verge at 1,058 m from the threshold, while the larger half of the right nose wheel assembly was found on the runway, 1,129 m from the threshold.

The marks made by the nose landing gear (NLG) shock strut on the runway were seen from point 971 m from touchdown point up until 2,491 m where the shock strut made deep cuts on the runway.

The lower fan cowl area of engine No. 2 impacted the runway and scratches were found there. Also, the RH main wheel outboard tyre was found deflated with severe flat spot.



Figure 5: Photo showing nose landing gear strut stuck in the runway



Figure 6: Photo showing nose landing gear strut with torsion link sheared off from lower end of the cylinder



Figure 7: Photo indicating 0.984 inches of the remains of the nose landing gear shock strut



Figure 8: Photo showing flange of the RH nose wheel assembly found at 971 m from runway threshold



Figure 9: Photo showing the main half of the RH nose wheel assembly found 1,129 m from the threshold



Figure 10: Photo showing LH nose wheel assembly found outside the runway on the grass verge, 1,058 m from the threshold



Figure 11: Photo showing severe flat spot on the deflated RH main wheel outboard tyre



Figure 12: Photo showing the damage to lower fan cowl of RH Engine

Initial Findings

Investigation so far revealed the following:

1. The pilots were certified to fly the aircraft.
2. The First Officer was the Pilot Flying (PF) and the Captain was the Pilot Monitoring (PM).
3. The aircraft had a valid certificate of Airworthiness.
4. The aircraft was cleared for landing on runway 18R.
5. The Captain took control of the aircraft at about 50 ft Above Ground Level (AGL).
6. At 11:28:33 h, CT transmitted the landing time to APK7191.
7. The runway surface was damaged by the nose landing gear shock strut abeam link A3 of runway 18R.
8. The lower fan cowl of the RH Engine was damaged.
9. The LH nose wheel assembly was found intact outside the runway on the grass verge, 1,058 m from the threshold.
10. The flange of the RH nose wheel assembly was found at 971 m from the runway threshold and the main half of the RH nose wheel at 1,129 m from the threshold.
11. The crew did not immediately inform the ATC about their landing status.
12. The conveyance vehicle and the moveable passengers' stairs arrived at about 11:49:35 h.
13. The crew and passengers disembarked normally without any injury.
14. On arrival of the Air Safety Investigators at the site, it was observed that the two aircraft engines were shut down but the APU was running.
15. The recordings of the occurrence on the CVR were found overwritten.

IMMEDIATE SAFETY RECOMMENDATIONS

1. Immediate Safety Recommendations 2019-004

NCAA should ensure that all airline operators review their SOPs to include procedure for isolating power to the cockpit voice recorder to preserve its contents from being overwritten, in the event of any reportable occurrence.

2. Immediate Safety Recommendations 2019-005

Air Peace Limited should ensure that flight crew adheres to strict compliance with Company Operations Manual (OM Part A) Chapter 11 (11.4.3) on Preservation of Recordings.

3. Immediate Safety Recommendations 2019-006

NCAA should ensure that Air Peace Limited complies with Immediate Safety Recommendations 2019-005 in accordance with Nig.CARs 8.5.1.24 (b)(c); IS: 9.2.2.5.

4. Immediate Safety Recommendations 2019-007

Air Peace Limited should ensure that best handling technique is emphasized during crew training on single channel auto-pilot operation.

5. Immediate Safety Recommendations 2019-008

Air Peace Limited should ensure that its crew adheres strictly to the Company's SOP in carrying out a missed approach/go-around promptly, below 1000 ft AGL in an unstabilized approach.

6. Immediate Safety Recommendations 2019-009

NCAA should circulate an ALL OPERATORS LETTER (AOL) to airlines on the need for their crew to carry out emergency evacuation; being the best option, in the

event of a serious incident or accident; with the aircraft structure compromised during landing or stops in an unapproved aircraft maneuvering area.