



## **PRELIMINARY REPORT ON SERIOUS INCIDENT INVOLVING BOEING 737-300 AIRCRAFT BELONGING TO AIR PEACE LIMITED WITH NATIONALITY AND REGISTRATION MARKS 5N-BUO WHICH OCCURRED AT FL 310 ENROUTE ENUGU FROM LAGOS ON 14<sup>TH</sup> DECEMBER, 2018**

<b>Registered Owner and Operator:</b>	Air Peace Limited
<b>Aircraft Type and Model:</b>	Boeing 737-36Q
<b>Manufacturer:</b>	Boeing Aircraft Company
<b>Date of Manufacture:</b>	1997
<b>Nationality and Registration Marks:</b>	5N-BUO
<b>Serial Number:</b>	28660
<b>Location:</b>	FL 310 Enroute Akanu Ibiam International Airport Enugu
<b>Date and Time:</b>	14 <sup>th</sup> December, 2018 at about 10:44 h <i>(All times in this report are local time (UTC +1) unless otherwise stated)</i>

### **INTRODUCTION**

Accident Investigation Bureau (AIB) became aware of this serious incident on social media before being officially notified by the operator in the evening of 14<sup>th</sup> December, 2018. The aircraft was met by the investigators at the GAT apron in Lagos where it was parked after being ferried from Enugu. Post incident assessments commenced immediately under the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2016 and Annex 13 of International Civil Aviation Organization (ICAO).

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

**The investigation is ongoing.**



## **1.0 FACTUAL INFORMATION**

### **1.1 History of the Flight**

On 14<sup>th</sup> December 2018, a Boeing 737-300, 5N-BUO with flight number APK7100 was operated as a scheduled passenger flight from Murtala Muhammed International Airport, Lagos to Akanu Ibiam International Airport, Enugu on Instrument Flight Rules (IFR) Flight Plan. The service was initially intended to be operated by another Boeing 737 with nationality and registration marks 5N-BUK in the operator's fleet, but due to Engine cowl valve light illumination and the unserviceable wing Flap system, the aircraft was changed.

Thereafter, passengers were relocated to another aircraft (5N-BUO) for the flight.

While performing the Pre-flight inspection on 5N-BUO, the Captain noticed the pressurization mode controller was in the alternate position and the left engine bleed switch on the air conditioning control panel was placarded 'INOP'. The Captain said he invited the Engineer into the cockpit who verbally explained that the No.1 engine supplies bleed at 18 psi and that it was working regardless of the placard placed on it.

At 10:27 h, 5N-BUO departed Lagos for Enugu with 136 persons on board and about 9,000 kg fuel. The First Officer was the Pilot Flying while the Captain was the Pilot Monitoring. The take-off/climb phase was normal. The flight crew stated that the pressurization system was monitored until reaching FL 310. At cruising level of 31,000 ft above mean sea level, the cabin pressure altitude was normal for about thirteen minutes. However, at about 20 miles to Top of Descent (TOD), while the first-officer was briefing the Captain for descent; a bleed trip-off on the right Engine was observed as indicated by illumination of the bleed trip-off light, and the crew carried out the Quick Reference Handbook (QRH) procedure.

According to the First-Officer, some minutes after the checklist procedure was carried out, the cabin altitude started climbing at the rate of 3,500 ft per minute. The crew requested descent and were cleared to FL 110 by the Lagos ATC although they did not disclose any emergency or operational difficulty to the ATC. According to the flight crew, during the descent, the cabin altitude warning horn sounded at FL 165 following which the rapid depressurisation checklist was accomplished as the cabin altitude remained uncontrollable. The crew then embarked on emergency descent but at FL 120, the crew and passengers' oxygen mask had deployed automatically



and the cabin altitude remained at 14,000 ft. The crew later had contact with Enugu ATC and were cleared to descend to FL 65. The cabin altitude however became controllable at FL 80.

The first landing attempt on runway 26 with the First-Officer flying was unsuccessful as the aircraft came high on the approach and was not on the Localizer. The Captain took control of the aircraft and asked the first officer to request ATC for an orbit. The Captain executed the orbit and positioned on final Approach. Approach and Landing Checklists were completed and the aircraft touched down at 11:32 h.

The crew and passengers disembarked normally without any injury.

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

The aircraft later departed Enugu at 17:43 h and landed at 18:34 h as a ferry flight to Lagos on FL 100.

## 1.2 Injuries to Persons

<b>Injuries</b>	<b>Crew</b>	<b>Passengers</b>	<b>Total in the Aircraft</b>	<b>Others</b>
Fatal	Nil	Nil	Nil	Nil
Serious	Nil	Nil	Nil	Nil
Minor	Nil	2	2	Not Applicable
None	6	128	134	Not Applicable
Total	6	130	136	

## 1.3 Damage to Aircraft

The aircraft was not damaged.

## 1.4 Other Damage

Nil.



## 1.5 Personnel Information

### 1.5.1 Captain

Nationality:	Nigerian
Gender:	Male
Age:	40 years
Licence Type:	ATPL (A)
Licence Validity:	28 <sup>th</sup> October, 2023
Aircraft Ratings:	B737-300/500, Lear jet 45, Dornier-328-30, Baron 58
Medical Certificate:	Valid till 8 <sup>th</sup> January, 2019
Simulator:	Valid till 27 <sup>th</sup> April, 2019
Proficiency Check:	Valid till 27 <sup>th</sup> April, 2019
Route/Line Check:	1 <sup>st</sup> December, 2017
Total Flying Time:	5,884:50 h
Total on Type:	1,640 h
Total on Type (PIC):	Not Available
Last 90 Days:	129:50 h
Last 28 Days:	36:05 h
Last 24 Hours:	0 h

### 1.5.2 First Officer

Nationality:	Nigerian
Gender:	Male
Age:	33 years
Licence Type:	CPL (A)
Licence Validity:	11 <sup>th</sup> May, 2023
Aircraft Ratings:	B737-300/500
Medical Certificate:	Valid till 1 <sup>st</sup> October, 2019
Simulator:	Valid till 5 <sup>th</sup> April, 2019
Proficiency Check:	Valid till 5 <sup>th</sup> April, 2019
Route/Line Check:	1 <sup>st</sup> March, 2018
Total Flying Time:	922:25 h
Total on Type:	922:25 h
Total on Type (PIC):	Nil
Last 90 Days:	194:05 h
Last 28 Days:	62:30 h



Last 24 Hours: 03:20 h

### 1.5.3 Engineer

Nationality: Serbian  
Age: 54 years  
Gender: Male  
Licence Type: A & B1  
Licence Validity: 26<sup>th</sup> March, 2020  
Ratings: B737-300/400/500/600-900, A318/19/20/21

### 1.5.4 Purser

Nationality: Nigerian  
Age: 41 years  
Gender: Female  
Licence Type: Cabin Crew Licence  
Licence Validity: 13<sup>th</sup> September, 2019  
Ratings: DHC-8Q400, A320-200, B737-300/500,  
DASH-8, EMB170/190, EMB-135/145  
Medical Validity: 13<sup>th</sup> September, 2019

## 1.6 Aircraft Information

### 1.6.1 General Information

Registration Number: 5N-BUO  
Manufacturer: The Boeing Company  
Model: B737-300  
Serial No.: 28660  
Date of Manufacture: 1997  
Registered Owner: Air Peace Limited  
Operator: Air Peace Limited  
Certificate of Airworthiness: 10<sup>th</sup> December, 2019  
Total Hours Since New: 58,092.9 h  
Total Cycles Since New: 36,669  
Total Hours since last inspection: 89 h



## 1.6.2 Power Plant

	<b>ENGINE No.1</b>	<b>ENGINE No.2</b>
Manufacturer:	CFM INTERNATIONAL	CFM INTERNATIONAL
Engine Type:	CFM 56-3C-1	CFM 56-3C-1
Year of Manufacture:	1997	1997
Serial No.:	857616	724992
Total time since New:	47,015.43 h	52,831.08 h
Cycles:	34,209	36,223

Engine No.1 bleed switch on the air-conditioning panel was placarded 'INOP'. Pressure on the left duct was 18 psi and this was entered in the Deferred Defect Log book on 12<sup>th</sup> December, 2018 with a limit of 22<sup>nd</sup> December, 2018. Action on the low bleed on engine no.1 was raised in accordance with MEL (36-05 CAT C).

Engine No. 2 with serial number 724992 was installed on the 11<sup>th</sup> of December, 2018. The aircraft was operated from 12<sup>th</sup> to 14<sup>th</sup> of December, the day of the incident. On the 13<sup>th</sup> of December 2018, the RIGHTSIDE bleed trip OFF LIGHT illuminated during descent. QRH procedure was followed and flight continued to destination (Lagos). The engine installation task was recorded in the engine logbook and signed on 14<sup>th</sup> December, 2018.

## 1.7 Meteorological Information

The following weather information was passed to the crew by the Enugu ATC:

Time:	0900 UTC
Wind:	Calm
Visibility:	6 Km
Weather:	Nil
Cloud:	NSC
Temp/Dew:	28/19°C
QNH:	1015

Time:	1000 UTC
Wind:	Calm
Visibility:	6 Km
Weather:	Nil



Cloud:	NSC
Temp/Dew:	31/15°C
QNH:	1015

## 1.8 Aids to Navigation

Status of the navigational aids at Enugu Airport on the day of the occurrence is as follows:

'EN' VOR/DME- 'S' -

'EN' ILS/DME - 'S' -

## 1.9 Communications

There was effective, two-way communication between the crew, Lagos and Enugu ATCs.

## 1.10 Aerodrome Information

Aerodrome Code:	DNEN
Airport Name:	Enugu Aerodrome
Airport Address:	Akanu Ibiam International Airport
Type of traffic Permitted:	IFR/VFR
Coordinates:	N 062824.7379 <sup>0</sup> , E 0073332.1556 <sup>0</sup>
Runway:	08 and 26
Elevation:	513.83 ft.
Runway Length:	3,000 m
Runway Width:	45 m
Meteorological Service:	Half Hour observation
Markings:	RWY: Designation, THR, TDZ, center line. Markings W: Center line edge, holding position. LGT: Edge light, flood light with obstruction lights on the flood light poles.



## **1.11 Flight Recorders**

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

### **Cockpit Voice Recorder**

Model:	SSCVR
Part Number:	980-6022-001
Serial Number:	CVR120-05860
Manufacturer:	Honeywell

### **Flight Data Recorder**

Model:	SSFDR
Part Number:	980-4700-042
Serial Number:	SSFDR-08740
Manufacturer:	Honeywell

## **1.12 Wreckage and Impact Information**

The aircraft experienced loss of pressurisation at FL 310 and the cabin altitude warning horn sounded while descending through FL 165. At FL 120, the passenger's oxygen mask automatically deployed.

## **1.13 Medical and Pathological Information**

Two passengers onboard the aircraft had asthmatic attack but were stabilised by the cabin crew with the aid of an inhaler and later with oxygen from a portable oxygen bottle. On landing at Akanu Ibiam International Airport Enugu, medical personnel were on ground to provide further medical attention to the affected passengers.





### **1.14 Fire**

There was no fire.

### **1.15 Survival Aspects**

The occurrence was survivable in that the cockpit crew donned their oxygen masks while the cabin crew and passenger's oxygen masks automatically dropped and were donned by the occupants as required which enabled them to breathe normally until they got to a safe altitude. The cabin crew also briefed the passengers properly before departure and at the outset of the emergency.

### **1.16 Test and Research**

Nil.



## Initial Findings

1. The aircraft had a valid certificate of airworthiness.
2. The mass and centre of gravity of the aircraft were within the prescribed limits.
3. The flight crew were properly licensed, medically fit and adequately rested to operate the flight.
4. The service was initially intended to be operated by a Boeing 737 with registration marks 5N-BUK in the operator's fleet but the aircraft became unserviceable.
5. The unserviceable aircraft was replaced by a Boeing 737 with registration marks 5N-BUO to operate the service.
6. There was no evidence to show that the Captain briefed the cabin crew or the passengers on the flight level the aircraft was to cruise.
7. On 12<sup>th</sup> December, 2018, a defect was recorded in the tech log as follows: 'LARGE DIFFERENCE IN L & R DUCT, INDICATOR IN CLB & CRZ, L- 18 PSI, R-48 PSI'. The action taken was 'ADD 076 RAISED IAW MEL 36-05 CAT C'.
8. The left engine bleed valve switch on the air-conditioning panel of 5N-BUO was placarded 'INOP'.
9. The take-off/climb out phase was normal.
10. The crew climbed to FL 310 with one air-conditioning pack inoperative as against the maximum FL 250 stipulated in the MEL.
11. At about 20 miles to Top of Descent (TOD), a bleed trip-off on the right Engine was observed as indicated by illumination of the bleed trip-off light.
12. The crew requested and were cleared to FL 110 by the Lagos ATC although they did not disclose any emergency or operational difficulty to the ATC.
13. According to the flight crew, the cabin altitude warning horn sounded at FL 165 following which the rapid depressurisation checklist was accomplished as the cabin altitude remained uncontrollable.
14. At FL 120, the cabin crew and passenger's oxygen masks automatically deployed and the cabin altitude remained at 14,000 ft.
15. During post incident inspection, the passenger oxygen switch in the cockpit was found wire-locked in 'Normal' position though the oxygen masks have dropped; hence the rapid depressurisation/emergency descent checklist was not completed.

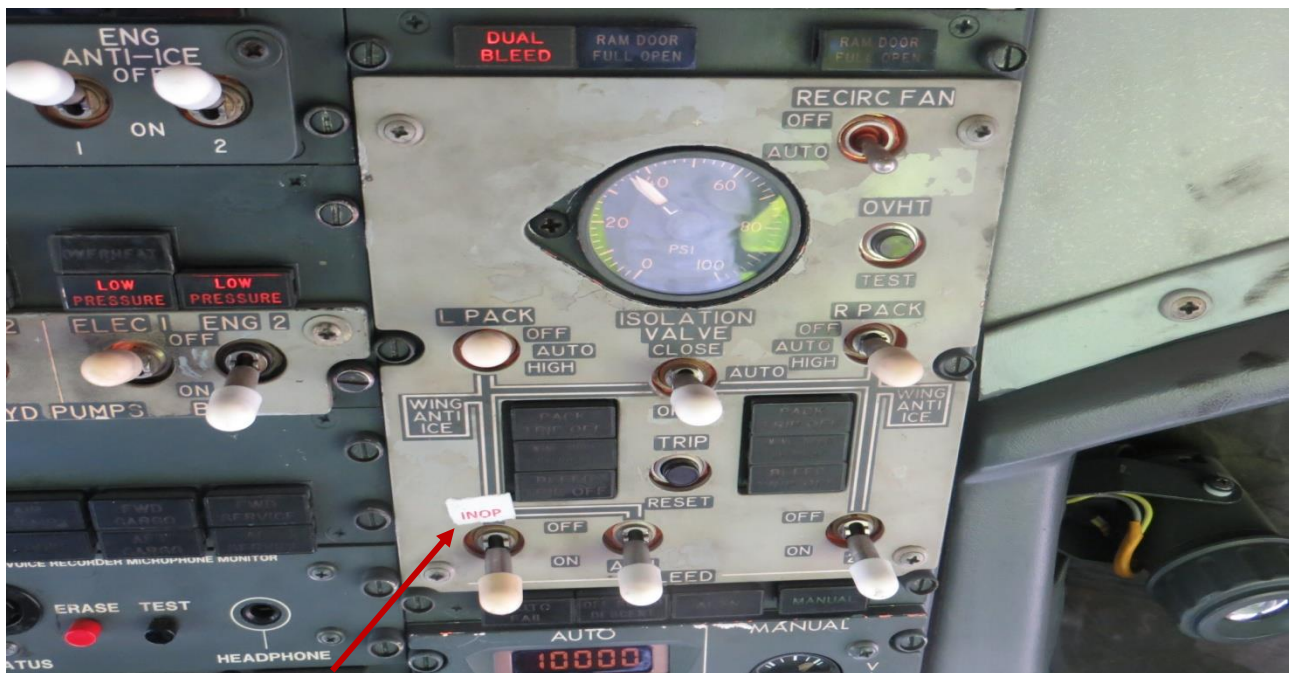
16. Shortly before the oxygen masks dropped, the purser reported that her ears were popping and she experienced dizziness.
17. Two passengers onboard the aircraft had asthmatic attack but were stabilised by the cabin crew with the aid of an inhaler and later with oxygen from a portable oxygen bottle.
18. Three portable Oxygen bottles were used to supplement the Oxygen masks.
19. Alterations, cancellations and inconsistent records were observed in the release/dispatch documents.
20. The crew and passengers disembarked normally without any injury.



**Figure 1:** Photo showing the aircraft parked at GAT Apron after ferry flight from Enugu



**Figure 2:** Photo showing cabin with dropped oxygen masks from overhead panels



**Figure 3:** Photo showing the left engine bleed switch on air-conditioning control panel with 'INOP' placard as indicated by the Red arrow



**Figure 4:** Photo showing the Passenger Oxygen switch wire locked in 'Normal' position as indicated by the Red arrow.