



PRELIMINARY REPORT ON THE SERIOUS INCIDENT INVOLVING BOEING 747-400 AIRCRAFT OPERATED BY MAX AIR LIMITED WITH NATIONALITY AND REGISTRATION MARKS 5N-DBK WHICH OCCURRED AT MINNA INTERNATIONAL AIRPORT ON 7TH SEPTEMBER, 2019

Aircraft accident report number:	MAL/2019/09/07
Registered owner and operator:	Max Air Limited
Aircraft type and model:	B747-400
Manufacturer:	The Boeing Company, USA
Date of manufacture:	1996
Nationality and registration marks:	5N-DBK
Serial number:	26403
Location:	Runway 05, Minna Airport
Date and time:	7 th September, 2019 at 04:17

(All Times in this report are UTC unless otherwise stated)

Note: Minna local time is equivalent to UTC+1 and Jeddah local time is equivalent to UTC+3

INTRODUCTION

Accident Investigation Bureau (AIB) was notified of the incident by the Nigerian Civil Aviation Authority (NCAA) on 7th September, 2019. Investigators were dispatched to the incident site the same day and commenced post occurrence assessments, 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 the initial facts, discussions and findings surrounding the occurrence; it includes information gathered from witnesses' statements, preliminary inspection of the incident site, Air Traffic Control (ATC) recordings and transcripts, and the examination of the wreckage. The Cockpit Voice Recordings were not available.

The investigation is ongoing.

1.0 FACTUAL INFORMATION

1.1 History of the flight

On 6th September, 2019 a Boeing 747-400 aircraft with nationality and registration marks 5N-DBK operated by Max Air Limited arrived King Abdul Aziz International Airport (OEJN), Jeddah; Saudi Arabia from Murtala Mohammed Airport, Lagos, Nigeria (DNMM) at 17:10:00 as inbound flight NGL2091. The same aircraft, 5N-DBK departed OEJN for Minna Airport (DNMN); Nigeria as flight NGL2092, to airlift returning Hajj pilgrims There were 18 flight crew (including 2 cockpit crew, 14 cabin crew and 2 engineers) and 560 passengers with 8 h, 13 mins fuel endurance onboard. Instrument Flight Rules (IFR) flight plan was filed for the flight and Instrument Meteorological Condition (IMC) prevailed at the time of the incident. The Captain was the Pilot Flying (PF) and the First Officer was the Pilot Monitoring (PM).

The take-off, climb, cruise and descent phases of the flight were normal.

At 03:54:31 h, NGL2092 established communication with Minna Tower while descending to FL220 as cleared by Kano Control. Minna Tower acknowledged and cleared NGL2092 to Minna VOR (MNA) for ILS approach to Runway (RWY) 05, also requested NGL2092 to report release by Kano. Minna Tower passed the Minna 0300 h meteorological report to NGL2092 as follows: *surface wind is 030 at 06 kts, visibility is 10 km in nil weather, cloud few at 210 m, QNH is 1013, temperature is 23°C dew point 22°C.*

At 03:59:11 h, NGL2092 reported release by Kano and also recleared to FL060 by Kano. Minna Tower acknowledged and further recleared NGL2092 to FL050 and instructed NGL2092 to report 20 NM MNA.

During the post incident witness interview, the PM mentioned that at a point before 20 NM he complained to Minna Tower about the possibility of the presence of birds'



activities at Minna airport.

At about 20 NM MNA, NGL2092 reported position, passing FL100.

At 04:05:23 h, Minna Tower recleared NGL2092 to 3200 ft on QNH 1013, cleared for ILS approach RWY 05 and requested NGL2092 to report beacon outbound leaving 3200 ft. NGL 2092 acknowledged. At 04:07:35 h, NGL 2092 reported outbound.

At 04:09:05 h, NGL 2092 further reported to Minna Tower that there was an accumulation of storms on the final approach path, therefore requested to deviate left and extend the downwind of runway 05. Minna Tower acknowledged and instructed NGL2092 to report when clear of weather.

At 04:13:33 h, NGL 2092 reported RWY 05 insight, established on the localizer (LOC) 05 and also clear of the accumulated storm on the final approach path of RWY 05. Minna Tower cleared NGL 2092 to land RWY 05 with a reported prevailing wind of 030°/ 07 kts.

The PF stated that during the final approach while passing 2000 ft, the ILS signal was erratic on glideslope and localizer. At that point, the autopilot was disengaged and aircraft was hand flown on visual cues to landing. He further reported that, at touchdown the aircraft drifted slightly right of centerline and while making correction to bring the aircraft to the centerline it over banked. As a result, the number one engine impacted was dragged along the runway surface, causing damage to the engine cowl and thrust reverser (T/R) cowls. The PM corroborated this in his statement.

According to the ATC transcripts, at 04:17:50 h, NGL2092 landed on runway 05. Minna Tower passed the landing time and issued taxi instructions.

At 04:19:43 h, the flight crew reported to Minna Tower that the LOC RWY 05 was not well calibrated and the Tower acknowledged. NGL2092 taxied to the apron and parked. All passengers disembarked the aircraft normally.

The serious incident occurred at dawn.

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	18	560	578
TOTAL	18	560	578

1.3 Damage to aircraft

The aircraft was slightly damaged.

1.4 Other damage

One runway edge light was damaged.

1.5 Personnel information

1.5.1 Pilot

Nationality: Indonesian

Age: 63 years

License type: Airline Transport Pilot Licence (A)

License validity: 20th September, 2019



Aircraft Ratings:	Fokker 28, Boeing 737, Boeing 747-200, Boeing 747-400
Medical Certificate validity:	15 th December, 2019
Simulator validity:	17 th December, 2019
Total flying time:	25,033:25 h
Total on type:	Not available
Total on type (PIC):	Not available
Last 90 days:	140 h
Last 28 days:	50 h
Last 7 days:	Not available
Last 24 hours:	Not available

1.5.2 Co-pilot

Nationality:	Nigerian
Age:	53 years
License type:	Airline Transport Pilot Licence (A)
License validity:	23 rd January, 2023
Aircraft ratings:	(Type 1) Boeing 747-400 (Type 2) BAC 1-11, Dornier-228, Let 410, Boeing 747 -200/300, Boeing727
Medical Certificate:	23 rd June, 2020
Simulator validity:	24 th October, 2019 Boeing 737 Boeing 737-400



(Simulator Valid for Max Air Operations)

Instrument rating:	Valid until 24 th April, 2020
Total flying time:	24,894:15 h
On Type:	Not available
Total on type (PIC):	Not available
Last 90 days:	140 h
Last 28 days:	50 h
Last 7 days:	Not available
Last 24 Hours:	Not available

1.6 Aircraft information

1.6.1 General information

Type:	Boeing 747-4B5
Manufacturer:	The Boeing Company, U.S.A.
Date of manufacture:	1996
Serial number:	26403
Certificate of Airworthiness:	Valid until 15 th November, 2019
Certificate of Insurance:	Valid until 20 th December, 2019
Certificate of Registration:	Issued 27 th July, 2016
Noise Certificate:	Issued 28 th July, 2016



Total Airframe Time: 85,009 h

Total landing cycles: 13,268

1.6.2 Engines

Engine	No.1	No. 2	No. 3	No. 4
Manufacturer	Pratt and Whitney, USA	Pratt and Whitney, USA	Pratt and Whitney, USA	Pratt and Whitney, USA
Type/Model	PW4056-3	PW4056-3	PW4056-3	PW4056-3
Serial No.	P729053	P729134	P729135	P727813
Time Since New:	52642:27	49677:10	51344:30	72218:13
Cycles Since New:	10687	10235	10649	12436

Fuel Used: Jet A1

1.7 Meteorological information:

DNMN 03:00 UTC

Wind: 030°/06 kts

Visibility: 10 km

Weather: NIL

Cloud: FEW 210 m

Temp/Dew: 23°C/22°C

QNH: 1013 hPa

TREND: NOSIG



DNMN 04:00 UTC

Wind: 010°/14 kts
Visibility: 10 km
Weather: LIGHT RAIN
Cloud: SCT 240 m
Temp/Dew: 24°C/22°C
QNH: 1014 hPa
TREND: TEMPO FEW 540 m CB

DNMN 0500 UTC

Wind: 00000 kts
Visibility: 10 km
Weather: NIL
Cloud: SCT 210 m
Temp/Dew: 23°C/22°C
QNH: 1014 hPa
TREND: TEMPO FEW 510 m CB

1.8 Aids to navigation

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

1. Wind sock	Serviceable
2. Wind direction and speed indicator	Serviceable
3. "MNA" VOR/DME (115.1 MHz)	Serviceable
4. "IMN" ILS/DME (110.5 MHz)	Serviceable
5. Runway edge light (conventional)	Unserviceable
6. Runway edge light (solar)	Serviceable
7. Approach lights	Serviceable

1.9 Communication

There was effective communication between the aircraft and ATC.

1.10 Aerodrome information

Minna Airport (DNMN) has aerodrome reference point 093908.3996 N, 0062744.4033 E and an elevation of 834 ft (254 m). The aerodrome has a runway with orientation of 05/23. The length and width of the runway are 3,400 m and 45 m respectively, with an asphalt/concrete un-grooved surface. Runway 05 has a Precision Approach Path Indicator (PAPI).

1.11 Flight recorders

The aircraft is fitted with Solid-State Flight Data and Cockpit Voice Recorders.

Recorders	Flight Data Recorder	Cockpit Voice Recorder
Manufacturer	Honeywell	L-3 Communication
Model	SSFDR	A200S
Part Number	980-4700-042	S200-0012-00
Serial Number	12626	01388

The Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) were retrieved and downloaded at the Flight Safety Laboratory of Accident Investigation Bureau (AIB) Nigeria.

There were no relevant data recorded on the CVR as it was not serviceable as at the time the aircraft was dispatched. Data pertinent to the incident flight were captured on the FDR which include: localizer deviation, glideslope deviation, pressure altitude, radio height and vertical acceleration.

1.12 Wreckage and impact information

Examination of the marks on the runway revealed the following; The aircraft crossed the threshold right of centre line, was in a left bank, the left main wheels touched down and the number one engine nacelle contacted the runway on the centre line, 203 m from the threshold, and was dragged on the runway along the centre line for approximately 44 m. The body wheels touched down, followed by the right main

wheels. The touchdown point was 203 m from the threshold on the right side of the runway centreline, the aircraft gradually steered to the centre line.

On examining the number one engine, the bottom surface of the nacelle was abraded, thereby releasing the cowl latches resulting in the fan cowls being blown off the engine by the slipstream.

The following were also observed:

1. Damage to the bottom intake of engine number 1
2. Damage to fan cowl (left and right) on engine number one
3. Damage to thrust reverser cowl on engine number one
4. Punctured fairing on the left wing
5. Damage to transfer tube between angle gear box and main gear box



Figure 1: Damage to the right cowling of engine number one



Figure 2: Damage to the left cowling of engine number one



Figure 3: Tyre marks indicating the touchdown point



Figure 4: Impact marks of engine number 1 on runway centerline



Figure 5: Damaged runway edge light

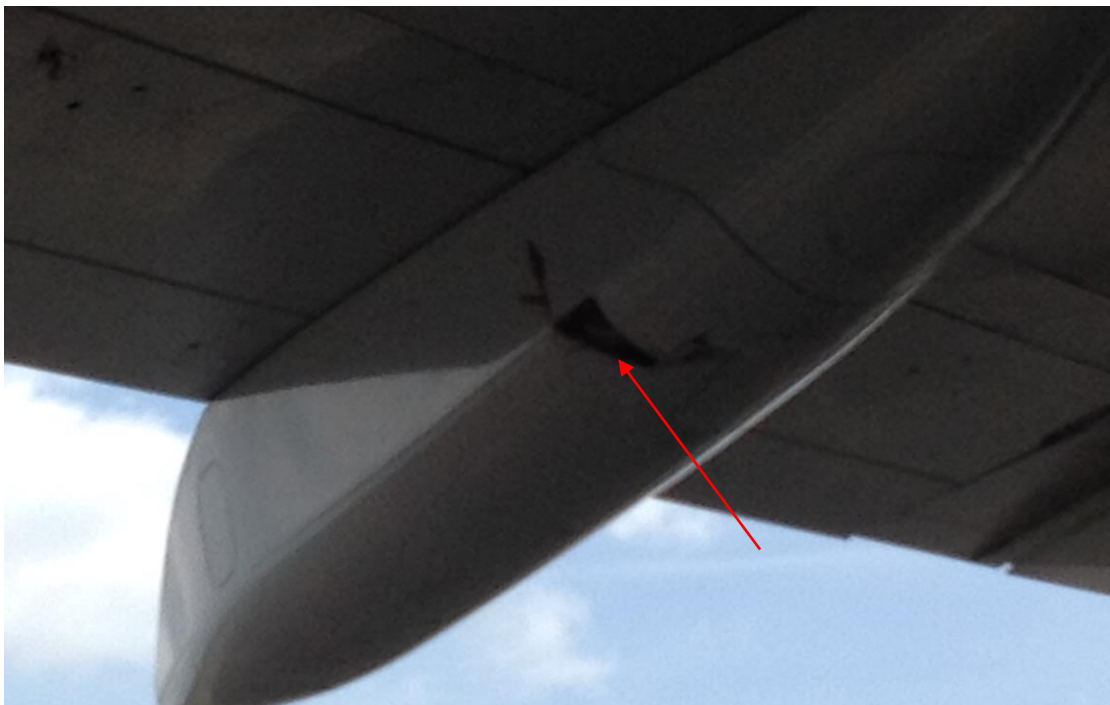


Figure 6: Punctured flap fairing on the left wing



Figure 7: Bird strike at the edge of the radome

1.13 Medical and pathological information

No medical tests were conducted. Reasonable efforts were in place to submit the flight crew to alcohol and drug testing, which was the normal procedure in aircraft accident investigations. Due to the absence of suitable testing facility in the vicinity, the efforts were unsuccessful.

1.14 Fire

There was no pre- or post-impact fire.



1.15 Survival aspect

The incident was survivable. The passengers disembarked normally and unhurt.

1.16 Test and research

Nil.

INITIAL FINDINGS

1. The crew were certified and qualified to conduct the flight
2. One runway edge light was damaged
3. Bird strike at the edge of the radome was observed
4. The Cockpit Voice Recorder (CVR) was unserviceable
5. Max Air does not have an approved Safety Management System as required by the Nigerian Civil Aviation Regulations



IMMEDIATE SAFETY RECOMMENDATIONS.

1. NAMA should ensure that the Navigational Aids installed at all the operating airports in Nigeria are calibrated in accordance with the AIP Supplement S 38/2019 dated 10th September, 2019
2. FAAN should always ensure that there is effective control of birds and wild life during airport operating hours at Minna Airport