

Preliminary Report on the Ground Collision Incident involving an EMB-135BJ aircraft Registered 5N-BXK Operated by Max Air Limited and a Parked ATR 42 Aircraft Registered NAF 930 Operated by Nigerian Air Force which occurred on the Apron of the General Aviation Terminal of Nnamdi Azikiwe International Airport Abuja; Nigeria on 26th April, 2022.

Registered owner:	Max Air Limited
Operator:	Max Air Limited
Aircraft type and model:	EMB 135 BJ
Manufacturer:	EMBRAER
Year of manufacture:	2009
Nationality and registration marks:	5N-BXK
Serial number:	14501086
Location:	General Aviation Terminal (GAT) Nnamdi Azikiwe International Airport, Abuja (DNAA)
Date and time:	26 th April, 2022 at 09:08 h

All times in this report are local time equivalent to UTC +1, unless otherwise stated.

INTRODUCTION

Accident Investigation Bureau, Nigeria (AIB) was notified of the incident by Max Air Ltd. Investigators were dispatched to site and post occurrence assessment commenced under the provisions of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2019 and ICAO Annex 13.



5N-BXK

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

The investigation is ongoing.

1.0 FACTUAL INFORMATION

1.1 History of the flight

On 26th January, 2022, at 09:02:13 h, an ERJ-135BJ aircraft with nationality and registration marks 5N-BXK and operated by Max Air Limited requested for Engine Start clearance for a chartered flight from Nnamdi Azikiwe International Airport, Abuja (DNAA) to Margaret Ekpo Airport Calabar (DNCA) having fuel endurance of 6 hours. On board the aircraft were six passengers and three crew members, including the Pilot, Co-pilot and Cabin Crew. The Pilot was the Pilot Flying (PF) while the Co-Pilot was the Pilot Monitoring (PM). The aircraft was parked at an unmarked position on the Apron of General Aviation Terminal (GAT) the previous day.

At 09:03:00 h, Air Traffic Control (ATC) responded "5N-BXK QNH 1012 temperature 28° time 08:03 (UTC) squawk 0407 Runway 22 start is approved" and 5N-BXK acknowledged the clearance.

At 09:06:18 h, the flight crew completed the AFTER START Checklist and at 09:06:26 h, they requested for Taxi Clearance. ATC cleared 5N-BXK to taxi to Holding Point Runway 22 (RWY 22) and the flight crew acknowledged the clearance. At this moment, there was no Ground Handling Agent of Max Air to assist the flight crew with wingtip clear watch during the taxi and the only Marshaller on duty at the GAT was attending to another aircraft.

At 09:07:08 h, 5N-BXK commenced taxi from its parking spot at a Bay on the GAT Apron to the Holding Point RWY 22.

During the taxi out of the Apron, the Cockpit Voice Recorder (CVR) recording indicated that the flight crew discussed about the tightness of available space to taxi¹. The PM watched the right side to ensure wingtip was clear of the several parked aircraft along the way and kept reporting to the PF that the right side was clear.

At 09:07:17 h, as 5N-BXK came close to where the ATR 42 (NAF930) was parked², the PF expressed concern that the space available became tighter. At this point, the PM informed the PF that there was space on the right side and advised the PF to move towards the right. The PF acknowledged and asked if there was space on the right side and the PM responded "a little to the right Sir, you have space in the right".

At 09:07:47 h, the flight crew expressed concern that, some people³ on ground were just standing there and watching without rendering any assistance to 5N-BXK. Meanwhile, the Nigerian Air Force personnel revealed during post occurrence interview that, as they saw 5N-BXK approaching, they split themselves into three groups to the right and left sides to watch the wingtip clear, and in front of the aircraft to attract the attention of the crew, but the flight crew did not respond to their signals to stop taxiing.

At 09:08:08 h, ATC advised 5N-BXK to exercise caution taxiing around traffic and the flight crew acknowledged.

At 09:08:22, the PF asked if right was clear and the PM responded "Yes Sir, right is clear, you can go straight first then you turn. You are clear on this side. Go straight first".

¹ At the time of the taxi, the Apron of the General Aviation Terminal was congested with several aircraft parked on both sides of the aisle, so each of the flight crew had to maintain wingtip clear watch on his side.

² NAF930 arrived GAT Apron at about 08:30 h was marshalled by NAF personnel to park at an unmarked position at the edge of the active Apron. At the time of the incident there was no person on board the ATR42.

³ The Nigerian Air Force (NAF) always maintains a number of its personnel at the GAT Apron to keep watch on NAF aircraft that are parked.

5N-BXK

At 09:08:29 h, as the PF commenced left turn to exit the Apron, the left winglet of 5N-BXK struck the Tail Cone of the parked ATR42 aircraft.

At 9:08:31 h, 5N-BXK came to a stop and the PF indicated that the flight was cancelled and instructed PM to stop the engines.

All persons on board 5N-BXK disembarked the aircraft normally without injury.

Post occurrence inspection of 5N-BXK showed that there was an abrasion on the left Winglet and a Static Discharge Wick was missing.

The incident occurred at 09:08:30 h, in daytime Visual Metrological Condition (VMC).



Figure 1: NAF ATR 42 Parked at unmarked spot beyond Active Apron Boundary Line

1.2 Injuries to persons

Injuries	Crew	Passengers	Others	Total in the aircraft
Fatal	Nil	Nil	Nil	Nil
Serious	Nil	Nil	Nil	Nil
Minor	Nil	Nil	Nil	Nil
None	3	6	Nil	9
Total	3	6	Nil	9

1.3 Damage to the aircraft (5N-BXK)

An abrasion on the left Winglet and a broken Static Discharge Wick.

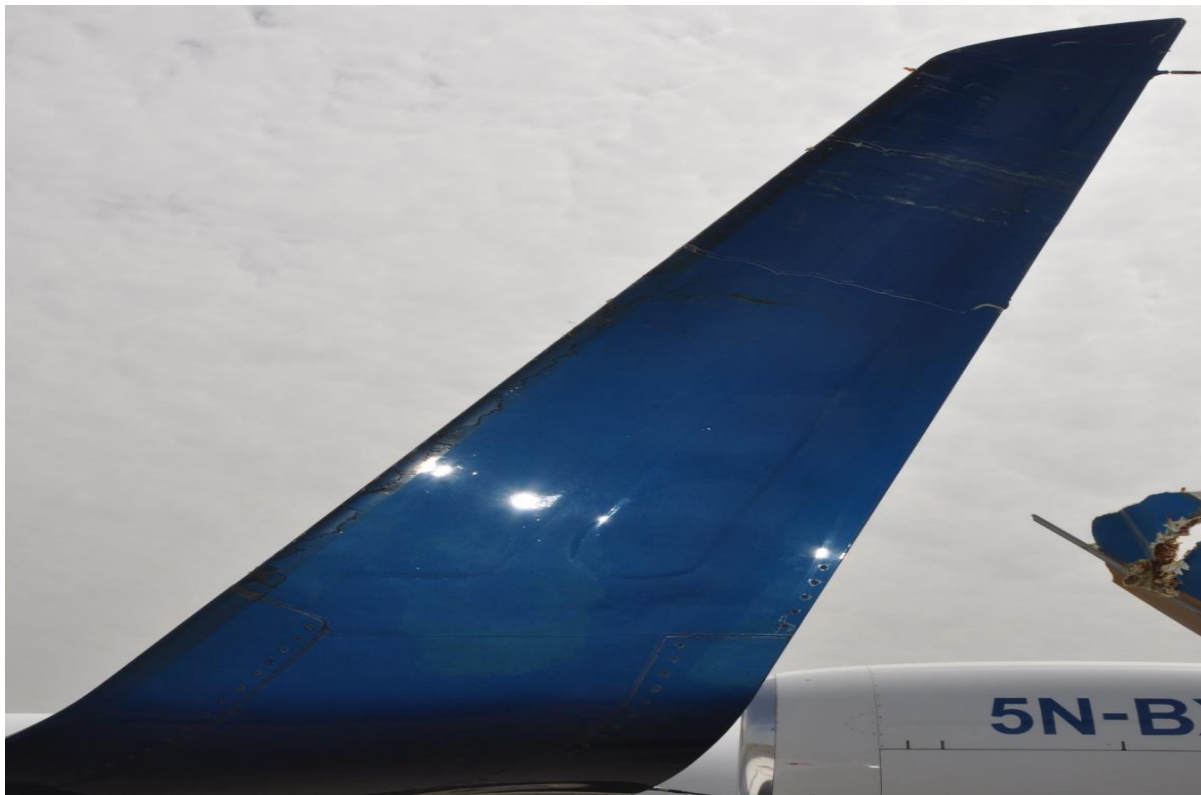


Figure 1: 5N-BXK Winglet abrasion and the broken discharge wick position

1.4 Other damage

The Tail Cone of the parked ATR 42 (NAF 930) sheared off.



Figure 2: Sheared off section of the Tail cone of the parked ATR 42 (NAF930)



Figure 3: Post occurrence aerial view of 5N-BXK and NAF ATR 42 (NAF930)

1.5 Personnel information

1.5.1 Pilot

Nationality:	Nigerian
Age:	40 Years
Licence type:	Airline Transport Pilot Licence (Aeroplane)
Licence:	Valid till 11th February, 2025
Aircraft ratings:	Part 1: EMB-135/145, Learjet-45
Medical certificate:	Valid till 21st February, 2023

5N-BXK

Instrument rating:	Valid till 26th February, 2023
Proficiency check:	Valid till 26th February, 2023
Total flying time:	5000 hours
Total as PIC:	2000 hours
Total on type:	600 hours
Total on type PIC:	600 hours
Last 90 days:	200 hours
Last 28 days:	50 hours
Last 24 hours:	0:40 hours

1.5.2 Co-Pilot

Nationality:	Nigerian
Age:	32 years
Licence type:	Commercial Pilot Licence (Aeroplane)
Licence:	Valid till 10th February, 2024
Aircraft ratings:	Part 2: EMB-135/145
Medical certificate:	Valid till 13th February, 2023
Instrument rating:	Valid till 26th February, 2023
Proficiency check:	Valid till 26th February, 2023
Total flying time:	580 hours
Total on type:	370 hours
Last 90 days:	50 hours
Last 28 days:	20 hours

Last 24 hours: 0

During Pre-flight preparations, there were no Ground Handling Agents of Max Air to provide marshalling and *Wing Clear* guide to the aircraft for Start-up and taxi; and neither did the flight crew request for the FAAN Marshaller on duty at the GAT to provide marshalling service. The flight crew did not conduct Briefing on taxiing in a congested Apron prior to commencing the taxi out. During the taxi, the flight crew were heard on the Cockpit Voice Recorder (CVR) expressing concern on the way certain aircraft were parked on the Apron and that some people standing around but not rendering any assistance to them. The Pilot Monitoring (PM) was consistently informing the Pilot Flying (PF) that the right was clear and the PF should move more towards the right side. Just moment before the impact, the PM emphasized to the PF to move to the right side and should continue further straight before initiating the left turn.

1.5.3 ATR 42 (NAF930) Flight crew

The flight crew of the ATR 42 NAF930 indicated that, they have been operating into DNAA for several years and that, based on the availability of space on the GAT Apron, the NAF Marshaller guides them to parking spot. The GAT Apron has become highly congested due to increasing traffic of corporate and private aircraft.

On 26th April 2022, the flight crew had an early departure from Nnamdi Azikiwe International Airport Abuja (DNAA) to Benin Airport (DNBN) and back to Abuja (DNAA). At 08:30 h, ATR 42 NAF930 landed DNAA and was marshalled to the available parking spot by the military Marshaller on duty at GAT Apron as the Apron was congested. They stated that Post-flight Walk-around was carried out and the ATR 42 NAF930 was aligned with a Challenger aircraft that was parked behind it. They also stated that they did not notice ATR 42 NAF930 was parked at an unmarked position and that its nose was a little aft of the Bombardier aircraft on its left side. The flight crew stated that they were not

aware that the ATR 42 NAF930 Tail Section protruded into the Apron Taxi Lane used by 5N-BXK.

1.5.4 NAF Marshaller on duty at GAT Apron

Post-occurrence interview revealed that, the Nigerian Air Force (NAF) designated Marshaller on duty at GAT Apron who marshalled the ATR 42 NAF930 to park at an unmarked spot just prior to the occurrence, had been marshalling aircraft at the GAT Apron for the past three months prior to the date of the occurrence; but had no formal training on aircraft marshalling.

1.5.5 Other three NAF personnel on duty at GAT Apron

The other three NAF personnel on duty at the GAT Apron at the time of the occurrence stated that they were aircraft Technicians, whose duty was to provide maintenance and marshalling services to NAF aircraft. The three NAF personnel and the NAF Marshaller on duty would normally stay on the GAT Apron to ensure that the parked ATR 42 NAF 930 was protected (proper clearance); while other aircraft taxi pass through.

According to them, the taxiing 5N-BXK at first seemed clear from afar, but as it approached towards the ATR 42 NAF930, it became apparent that the left wing of 5N-BXK was not clear of the parked ATR 42 NAF930 Tail Section. The four NAF personnel on the Apron immediately split themselves into three groups namely; one to the right side to watch right wing clear, two stayed on the left side to watch left wing clear and one moved to the front of 5N-BXK to attract the attention of the 5N-BXK flight crew.

According to the NAF personnel, the 5N-BXK flight crew did not respond to the signals to stop taxiing when it became apparent that the left wing of 5N-BXK was not clear of the parked ATR 42 NAF930.

1.6 Aircraft information

1.6.1 General information

Type:	EMB-135BJ
Manufacturer:	Embraer
Year of manufacture:	2009
Serial number:	14501086
Registered owner/operator:	Max Air Limited
Nationality and registration marks:	5N-BXK
Certificate of Airworthiness:	Valid till 2nd December 2022
Certificate of Insurance:	Valid till 17th August 2022
Certificate of Registration:	Issued on 22nd October 2019
Airframe time:	4817:47 hours
Cycles since new (CSN):	4451

1.6.2 Power plant

Engine	Number 1	Number 2
Manufacturer	Rolls Royce, USA	
Model	AE 3007	
Serial number	CAE-31313	CAE-31316
Time Since New (TSN)	4817:47 hours	4817:47 hours
Cycles Since New (CSN)	4451	4451

Fuel type used: Jet A-1

1.6.3 Post occurrence inspection and rectification of defect

A report by SKYJET on behalf of Max Air Ltd, shows that on 1st May 2022, the following post occurrence aircraft inspection of the aircraft (5N-BXK) based on the recovery recommendations provided by EMBRAER Technical Support was completed:

- 1) Performed detailed visual inspection (DET) in affected regions (winglet area) and surroundings in accordance with (IAW) Aircraft maintenance manual (AMM) 57-52-00 Part II and EMBRAER case number [EEJ-0442047]. No major damage or abnormality, found only abrasions, abrasion cleaned, and new winglet leading edge erosion tape installed.
- 2) Performed DET in the wing-to-fuselage fairings IAW AMM 57-52-00 Part II and EMBRAER case number [0442047]. No damage or abnormality on fairings and seals.
- 3) Missing static dischargers recovered, inspected and found satisfactory. Static dischargers reinstalled IAW AMM 23-60-01-04 Part II.

1.7 Meteorological information

Not applicable.

1.8 Aids to navigation

Not applicable.

1.9 Communications

There was effective communication between the aircraft and air traffic control.

1.10 Aerodrome information

The Nnamdi Azikiwe International Airport, Abuja (DNAA) has aerodrome reference points 09°00'25"N, 007°15'47"E and elevation 1123 ft with runway orientation 04/22. The runway has a length of 3610 m and a width of 60 m with asphalt/concrete surface and a blast pad of 65 m at both ends. DNAA has a General Aviation Terminal (GAT) dedicated to private and corporate aircraft flight operations. There has been increasing scheduled and unscheduled traffic into the Abuja airport. The GAT Apron has always been congested with parked private and corporate aircraft. Aircraft are marshalled by the Federal Airports Authority of Nigeria (FAAN) Marshaller on duty to park at marked parking positions and also to park at unmarked spots on the GAT Apron. A construction project to expand the GAT Apron was ongoing as at the date of the incident.

As at the time of the occurrence, Link A2 which would have been normally used to taxi out to runway 22 was blocked by a large body aircraft (Airbus 350) on a *Special Parking* provisions.

FAAN has a total of 18 Marshallers on three-shift duty rosters who are distributed to serve traffic at the Domestic, International Terminals and the GAT. One Marshaller was assigned duty at the GAT on each shift. At the time of the incident, the Marshaller on duty at GAT was attending to another aircraft.

The 307 Executive Air-Lift Group (EAG) of the Nigerian Air Force (NAF) do from time to time park its aircraft on the GAT Apron. The EAG deploys military personnel to marshal its aircraft to available parking positions at the GAT Apron. During the occurrence, the ATR42 (NAF930) was parked on the GAT Apron at unmarked spot beyond the edge line of the active Apron and its tail section extended into the Apron Taxi Lane used by 5N-BXK. EAG military personnel normally mount guard around its own aircraft that are parked on the GAT Apron to ensure clearance was maintained by any taxiing traffic. At the time of this incident, four military personnel were on GAT Apron positioned to mount guard around the parked Nigerian Air Force ATR 42 (NAF 930).

1.11 Flight recorders

The aircraft is fitted with Solid-State Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) with the following particulars:

Recorders	Flight Data Recorder	Cockpit Voice Recorder
Manufacturer	Honeywell, USA	Honeywell, USA
Model	SSFDR	SSCVR
Part Number	980-4700-042	980-6022-001
Serial Number	SSFDR 16777	CVR 120-12411

The FDR and CVR were retrieved and downloaded successfully at the Flight Safety Laboratory of Accident Investigation Bureau (AIB), Abuja, Nigeria.

1.12 Wreckage and impact information

According to the flight crew, after 5N-BXK was cleared for taxi, the aircraft commenced taxi with normal speed. While taxiing, the crew discussed and assessed the situation in order to safely taxi out of the GAT Apron. Thereafter, the ATC advised 5N-BXK to exercise caution considering the congestion of the GAT Apron. As 5N-BXK commenced a left turn to exit the GAT Apron, its left winglet impacted the Tail Section of the parked NAF ATR 42 and as a result a section of the Tail Cone sheared off.

5N-BXK



Figure 4: NAF ATR 42 parked at unmarked spot with its Tail Section protruding into the Apron Taxi Lane. Other aircraft parked at unmarked spots on the GAT Apron right side of 5N-BXK



Figure 5: Aerial view of aircraft parked at marked positions and at unmarked spots on both sides of the GAT Apron Taxi Lane of the congested GAT Apron

1.13 Medical and pathological information

The 063 Nigerian Air Force Hospital Abuja reported that at about 15:45 h, samples were taken from the flight crew by the Laboratory department of for drug toxicology test.

The results of the drug toxicology tests reveal as follows:

- 1) The Pilot Monitoring tested negative to all the drug substances contained in the test kit.
- 2) The Pilot Flying tested positive to Morphine, Opiates (OPi), Marijuana (THC) and Cotinine.

1.14 Fire

There was no pre or post impact fire.

1.15 Survival aspect

Not applicable.

2.0 INITIAL FINDINGS

1. The incident occurred at daytime in Visual Meteorological Conditions (VMC).
2. The flight crew were certified to operate the aircraft.
3. The Pilot was the Pilot flying.
4. The Federal Airports Authority of Nigeria (FAAN) has dedicated just one Marshaller on duty per shift at the General Aviation Terminal (GAT) Apron. FAAN operates a three-shift regime at GAT Apron.
5. The FAAN Marshaller on duty at the GAT Apron was attending to another aircraft at the time 5N-BXK commenced taxi out.
6. There was neither the Ground Handling Agents of Max Air nor the FAAN Marshaller on duty at GAT Apron to provide marshalling and wing clear guide prior to 5N-BXK commencing taxi out.
7. The flight crew did not conduct Briefing on taxiing in the congested Apron, even though they were heard on the Cockpit Voice Recorder (CVR) during the taxi discussing the manner aircraft were parked on the GAT Apron.
8. The flight crew were heard on the CVR during the taxi expressing concern that some people were just watching them without rendering any assistance even though the military personnel stated during post occurrence interview that they passed signals to the flight crew to stop taxi but there was no response.
9. The 307 Executive Air Group (EAG) of the Nigerian Air Force (NAF) also parks some of its aircraft at the GAT Apron from time to time.
10. EAG deploys military personnel to provide marshalling service to its aircraft at the GAT Apron and also mount guard on the parked aircraft to ensure clearance with any taxiing aircraft.
11. At 08:30 h, ATR 42 NAF930 landed Abuja and was marshalled to park at the GAT Apron by military personnel. The ATR 42 NAF930 parked at an unmarked spot on

- the GAT Apron, its right wing extended beyond the active apron edge line and its Tail Section protruded into the Apron Taxi Lane in use by 5N-BXK.
12. The military personnel that provided marshalling services to ATR 42 NAF930 prior to the occurrence did not have any formal training on aircraft marshalling.
 13. At 09:07:08 h, 5N-BXK commenced taxi from an unmarked parking spot at a Bay on the GAT Apron to the Holding Point RWY 22.
 14. The GAT Apron was congested with several aircraft parked on both sides of the Apron Taxi Lane at the time 5N-BXK was taxiing out.
 15. As the taxi progresses, Air Traffic Control advised the flight crew to exercise caution as the GAT Apron was congested.
 16. As at the time of the occurrence, Link A2 which would have been normally used to taxi out of the GAT Apron to runway 22 was blocked by a large body aircraft (Airbus 350) on a *Special Parking* provisions.
 17. A construction work for the expansion of the GAT Apron was going on at the time of the occurrence.