



PRELIMINARY REPORT

INVESTIGATION INTO SERIOUS INCIDENT OF ATR 42-300 AIRCRAFT, REG NO. S2-AHI OF NXT AIR LTD, OCCURRED ON 05 JUNE 2022 AT VGEG AIRPORT, CHATTOGRAM, BANGLADESH



**PUBLISHED BY
THE OFFICE OF THE AIRCRAFT ACCIDENT INVESTIGATION COMMITTEE OF BANGLADESH**

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INTRODUCTION

Preliminary Report of Investigation into Serious Incident of ATR 42-300 Aircraft, Reg No. S2-AHI of NXT AIR LTD, Occurred on 05 June 2022 AT VGEG Airport, Chattogram, Bangladesh

This Serious Incident investigation is being conducted by the Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD) in accordance with Civil Aviation Act 2017 and in conformity with Annex 13 to the Chicago Convention on International Civil Aviation organization.

This preliminary investigation report has been issued to project an updated status of the 'Notification' on the aforementioned serious incident. The report has been compiled in accordance with the requirements of ICAO Annex 13.

The Head of AAIC-BD received a Telephone call on 05 June 2022 from CGP Tower informing that one wheel was found near the end of runway 05 of VGEG after the departure of ATR-42-300 Reg. No. S2-AHI of NXT Air Ltd, Flight Number NXT 210. The duty controller further stated that this message was intimated to the flight crew of NXT Air. The Pilot-in-Command (PIC) decided to proceed to VGCB. It was also intimated that the aircraft landed safely at VGCB at 0636 UTC. Following the information of occurrence, the Head of AAIC-BD formed a 'Go-Team' comprising one investigator from Engineering and advised him to proceed to VGCB availing the fastest available means to inspect and protect the necessary evidences. The 'Go-Team' left Dhaka for Cox's bazar by the commercial flight at 09:00 Hrs Local Time on 06 June 2022 and reached the aircraft site at 10:00 hrs on the same day.

This has been in pursuance to Standard 3.3 of Annex 13, wherein the AAIC-BD has taken all reasonable measures to protect the evidence and to maintain safe custody of the aircraft and its contents for such a period as may be necessary for the purposes of investigation. The Head of AAIC-BD also advised the Airport/Aerodrome Authority and Operator on telephone for ensuring adequate protection of all the evidences and safe custody of the aircraft and its contents until the arrival of the 'Go-team' at the site.

The Office of the AAIC-BD, on the next day following the occurrence (06 June 2022), issued the necessary 'Notification' for the information of all concerned (National and International) as per the requirements of Annex 13. Subsequently the Head of AAIC-BD formed two-member Aircraft Accident Investigation Team (AAIT) which was issued through a 'Memorandum' to conduct the full length investigation. The two-member comprised of Member Engineering as Investigator-in-Charge (IIC) and the Member Operations of AAIC-BD as the Member of AAIT.

The information contained in this preliminary report has been derived from the factual information and evidences gathered so far during the on-going investigation of the occurrence and are being published pursuant to Standard 7.4 of Annex 13.

The AAIC-BD conceives that any Aircraft Accident Investigation and analysis thereof should focus on identifying the true underlying causes and/or contributing factors rather than indicating on some human omissions for the occurrence.

As per the principle of AAIC-BD and that of ICAO Annex 13, the sole objective of this investigation shall be to prevent aircraft accidents and incidents. It is not the purpose of this activity to apportion blame or liability.

Pursuant to Standard 6.5, in the interest of accident prevention, the AAIC-BD shall make the 'Final Report' and 'Safety Recommendations' publicly available as soon as practicable and, if possible, within twelve months from the date of the occurrence.

Two intermediary safety recommendations are included in this preliminary report as a measure to prevent/reduce this type of occurrence in future.

Unless otherwise indicated, recommendations in this report will be addressed to the Regulatory Authorities of the States having responsibility for the matters with which the recommendations are concerned.

Head
 Aircraft Accident Investigation Committee
 Bangladesh

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List of Acronyms

AAIC-BD	- Aircraft Accident Investigation Committee of Bangladesh.
AAIT	- Aircraft Accident Investigation Team
AMP	- Aircraft Maintenance Programme.
ATC	- Air Traffic Control
BAF	- Bangladesh Air Force
BEA	- Bureau of Enquiry and Analysis for civil Aviation Safety, France
CAAB	- Civil Aviation Authority Of Bangladesh
CGP	- Chattogram
CVR	- Cockpit Voice Recorder
DATCO	- Duty Air Traffic Controller
FDR	- Flight Data Recorder
IIC	- Investigator-In-Charge
PIC	- Pilon-In-Command
PT No	- Part Number
RW	- Runway
SN	- Serial Number
SMS	- Safety Management System
VGCB	- Cox's Bazar Airport, Cox's Bazar
VGEG	- Shah Amanat International Airport, Chattogram
VGJR	- Jashore Airport, Jashore

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1. TITLE

1.1 Composition of Title

1.1.1 Name of the Operator	NXT AIR LIMITED
1.1.2 Name of the Manufacturer	ATR
1.1.3 Aircraft Model	ATR 42-300
1.1.4 Aircraft Nationality	BANGLADESH
1.1.5 Aircraft Registration Marks	S2-AHI
1.1.6 Place of Occurrence	VGEG (SHAH AMANAT INTERNATIONAL AIRPORT, CHATTOGRAM, BANGLADESH)
1.1.7 Date of Occurrence	05 JUNE 2022

2. SYNOPSIS

2.1 Details of Synopsis

2.1.1 Notification of accident to national and foreign authorities	On the following day of the occurrence, the 'Office of the Aircraft Accident Investigation Committee of Bangladesh' notified to all relevant Authorities and Agencies as per Standard 4.1 of ICAO Annex 13.
2.1.2 Identification of the Accident Investigation Authority	Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD)
2.1.3 Accredited Representation	Having received the Notification from the AAIC-BD, the BEA responded immediately; appointed the accredited representative and confirmed that they would remain standby for any kind of support, should the AAIC-BD require.
2.1.4 Organization of the Investigation	Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD)
2.1.5 Authority releasing the report	Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD)
2.1.6 Date of publication or dispatch of report	30 June 2022
2.1.7 Brief resume of the circumstances leading to the accident	<p>(a) On 05 June 2022, Aircraft ATR 42-300, Registration no. S2-AHI was carrying out cargo mission of lifting baby shrimps to Jashore (VGJR) from Cox's bazar (VGCB). After offloading the cargo at VGJR, the aircraft landed at VGEG, Shah Amanat International Airport, Chattogram for refuelling. After refuelling the riding engineer carried out the transit check and declared the aircraft for onward flight to VGCB. The pilot-in-command (PIC) also carried out the transit check.</p> <p>(b) The aircraft took-off at 0535 UTC from VGEG for VGCB. Just after take-off, the bird shooter on duty informed the CGP Tower that a wheel was found at the end of RW 05 at 0539 UTC. One controller immediately went to the spot, found the wheel on the spot. The wheel was taken to the tower and kept under the custody of the ATC controller.</p> <p>(c) Meanwhile duty air traffic controller informed the PIC at 0540 UTC that the bird shooter on duty found a wheel beside the runway 05 after the departure of the flight.</p> <p>(d) According to the flight crew, the landing gear of the aircraft retracted normally during take off from VGEG and there was no abnormality felt during the take-off. The flight crew decided to proceed to VGCB as the maintenance base of the company was located at Cox's Bazar</p> <p>(e) Meanwhile, the VGEG tower communicated the event about finding the wheel to VGCB tower. At this stage, the flight crew were in a doubt as to whether the mentioned wheel belonged to their aircraft or not.</p>

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OFFICE OF THE AIRCRAFT ACCIDENT INVESTIGATION COMMITTEE OF BANGLADESH
MINISTRY OF CIVIL AVIATION & TOURISM
3RD FLOOR CAAB HEADQUARTERS (OLD BUILDING) KURMITOLA DHAKA-1229



Ref: 30.00.0000.013.33.001.22 (ATR 42-300/S2-AHI- 05 June 2022)-20

Date: 30 June 2022

	<p>(f) The flight crew carried out two low passes with the aircraft landing gear in down position to confirm by the ATC controller about the status of the landing gear as well as if any wheel was missing or not. Tower confirmed that outer wheel (No.1) of left Main Landing gear was missing but inner (No.2) wheel was intact with the left landing gear.</p> <p>(g) At this stage flight crew expressed their intention to land at VGCB and requested to arrange for all emergency assistance available for landing.</p> <p>(h) The control tower alerted three crash tenders, two from CAA Bangladesh and one from Bangladesh Air Force and positioned them beside the runway for any emergency.</p> <p>(i) The aircraft made safe landing at 0636 UTC at VGCB. The pilot used reverse thrust for slowing down the aircraft, made 180° turn and followed the ATC taxi instruction and parked the aircraft at the parking bay. After parking, the PIC went around the aircraft and made necessary entry into the maintenance log book. It could be ascertained that the wheel in question, indeed, belonged to S-2 AHI.</p>
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3. BODY

3.1 FACTUAL INFORMATION

3.1.1 History of the flight:

3.1.1.1 Flight number	NXT 202
3.1.1.2 Type of operation	Ferry flight from VGEG to VGCB
3.1.1.3 Last point of departure	VGEG
3.1.1.4 Time of departure (Local time or UTC)	0535 UTC
3.1.1.5 Point of intended landing	VGCB
3.1.1.6 'Flight preparation'	The aircraft S2-AHI was scheduled to conduct flights following the route VGCB-VGJR-VGEB-VGCB on 05 June 2022. The aircraft was pre-flighted by the licensed engineer at VGCB, transit check was carried out by riding engineer at VGJR, refuelling and transit check was carried out at VGEG by the same riding engineer. The PIC carried out the pre-flight check at VGCB and transit check at VGJR and VGEG. The aircraft was 'serviceable' prior to all flights of the day.
3.1.1.7 Description of the flight and events leading to the accident, including reconstruction of the significant portion of the flight path, if appropriate.	<p>(a) To conduct the last flight-leg of the day, the Aircraft departed from VGEG for VGCB at 0535 UTC on 05 June 2022.</p> <p>(b) After take-off, the DATCO of VGEG tower informed the PIC at 0540 UTC that the bird shooter on duty found a wheel near the end of runway 05 after their departure.</p> <p>(c) Considering the maintenance base at VGCB, PIC decided to proceed to VGCB.</p> <p>(d) The flight crew carried out two low passes to confirm about the missing wheel. Tower confirmed that outer wheel (No.1) of left Main landing gear was missing but the inner wheel (No.2) was with the landing gear.</p> <p>(e) VGCB tower arranged 2 crash tender of CAAB and one from BAF. All of them were positioned beside the runway for any emergency.</p> <p>(f) The aircraft landed safely at 0625 UTC and was parked at the parking bay.</p> <p>(g) The left landing gear was resting on No.2 (Inner) wheel only, the maintenance engineer placed a bottle jack under the left landing gear to ensure the safety of the aircraft.</p> <p>(h) A single-member 'Go-Team', who was subsequently designated as Investigator-in-Charge (IIC) by the Head of AAIC-BD reached at the Cox's Bazar Airport on 06 June 2022 and received information on the incident from the operator personnel that comprised the Head of Safety and the Head of SMS of NXT Air Ltd.</p> <p>(i) Thereafter, the 'Go-team' member visited the aircraft which was parked at tarmac and found the No.1 outer wheel of left landing gear was missing from the aircraft which was resting on No.2 wheel supported by a bottle jack under the left landing gear.</p> <p>(j) The 'Go-team' member went around the aircraft, carried out visual check and found apparently no damage, other than the missing wheel and its adjoining parts, to the remaining portion of the No.2 wheel assembly.</p> <p>(k) The team checked the technical log and verified the entry made by the flight crew after the incident.</p>
3.1.1.8 Location (Latitude, longitude, elevation)?	<p>VGEG, Shah Amanat International Airport, CHATTOGRAM.</p> <p>a) Latitude : 221446 N</p> <p>b) Longitude : 914852 E</p> <p>c) Elevation : 14 feet</p>
3.1.1.9 Time of the accident (Local or UTC)?	0535 UTC
3.1.1.10 Whether day/night?	Day

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3.1.2 Injuries to Persons

Injuries	Crew	Passengers	Others
3.1.2.1 Fatal	No	N/A	N/A
3.1.2.2 Serious	No	N/A	N/A
3.1.2.3 Minor	No	N/A	N/A

3.1.3 Damage to Aircraft (Brief description)

3.1.3.1 During inspection of the axle PN D57259-2 and the wheel assembly PN 5006856-5R, the below items were found:

- (a) Left wheel assembly PT No. PN 5006856-5R S/N: OCT89-96 was found damaged.
- (b) Hub Locking Bolt PN: AN3H5A (Qty 02) was found broken into two pieces. The upper part of both the locking bolts were attached with the locking wire with the wheel assembly, the lower part of both the bolts were attached with wheel axle till the tip of the thread on the other end.
- (c) Roller Bearing, Cone Assembly PN: L610549 (Outer Bearing Roller Cone) was found damage; 8 rollers came out from inside; Traces of corrosion was found in the roler and in the housing of bearing.
- (d) Scratch marks were found on the shinning portion of the left wheel axle PT No. D57259-2., Which was observed throught out the shinning part circumferatially.

3.1.4 Other Damage:

3.1.4.1 Nil

3.1.5 Personnel information (Flight Crew and Cabin Attendant)

- 3.1.5.1 Pilot-in-command : Adequately qualified and current on type
- 3.1.5.2 Co-pilot : Adequately qualified and current on type
- 3.1.5.3 Cabin Attendant : N/A

3.1.6 Aircraft information

- | | |
|---|--|
| <p>3.1.6.1 Brief statement on airworthiness and maintenance of the aircraft (indication of deficiencies known prior to and during the flight to be included, if having any bearing on the accident)</p> | <ul style="list-style-type: none"> (a) The aircraft ATR Model 42-300 Registration No. S2-AHI was first registered on 12 April 2016 in Bangladesh, operated by Hello Air Limited. The last flight was carried out on 27 September 2016 and the aircraft was stored with limited preventive maintenance from 27 September 2016 until 06 May 2018 at Cox's Bazar. (b) The aircraft went for shop visit at GMR Aero Technich, Hydrabad, India on 25 October 2018. Keel beam was repaired due to corrosion, both engine was removed and installed after shop visit, replacement of LH No.1, No.4 and RH No.1 propellor was carried out. Test flight was carried out and 'released to service' was issued by GMR Aero Technich on 30 October 2019. (c) The aircraft was returned back to Cox's Bazar on 06 December 2019, kept in short term storage till 25 January 2020. The aircraft started regular flight from 25 January 2020. (d) Meanwhile, major checks like one year, aircraft weighing, 18 months, one year and 2 years checks were carried out on 31 October 2020, 20 January 2021, 27 April 2021, 7 February 2022 and 23 March 2022 respectively as per Aircraft Maintenance Program (AMP) by Hello Air Limited, CAAB |
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	<p>Approved Part 145 AMO.</p> <p>(e) The C of R was changed due to change of operator, that is, the name of NXT AIR Limited was endorsed as new operator on 11 March 2022.</p> <p>(f) The C of A was renewed on 25 April 2022 after 2 years inspection and the Airworthiness review certificate (ARC) was issued on 25 April 2022.</p> <p>(g) The aircraft was manufactured on 04 June 1993, flew total 42116.33 hrs since new. Following 2 years inspection, the aircraft flew 49:00 hrs and cycle 64.</p> <p>(h) Following the recent occurrence wherein, No.1 wheel assembly detached during take-off roll at VGEG, the aircraft has been grounded since 05 June 2022.</p> <p>(i) Regarding the Maintenance history of the detached left wheel assembly PN: 59968565R SN: OCT 89-96, the IIC visited the airlines store on 07 June 2022 to find out the history of the affected wheel. The IIC checked the receiving and issuing register including the bin card, the summary of which are given below;</p> <ol style="list-style-type: none"> 1. The aircraft ATR 42-300 S2-AHI has flown to Bangladesh on 20 March 2016 with this wheel installed in no.4 position. 2. The same wheel assembly was removed from aircraft in serviceable condition and kept in the store on 07 April 2018. 3. This was again installed on S2-AHI on 23 June 2020. 4. The wheel assembly was again removed from S2-AHI as unserviceable due to ply worn out on 19 August 2020. 5. The bin card was maintained by the store-keeper who did not have any information on the removal, installation or maintenance of this wheel assembly. 6. When asked by the IIC, the operator failed to answer as to how this unserviceable wheel assembly was installed in the aircraft, at what position and in which date. <p>(j) The AAIC will carry out indepth investigatin and will reflect it in the final report.</p>
<p>3.1.6.2 Brief statement on performance, if relevant, and whether the mass and centre of gravity were within the prescribed limits during the phase of operation related to the accident. (If not and if of any bearing on the accident give details.)?</p>	<p>The mass and centre of gravity of the aircraft didn't have any bearing on the accident</p>
<p>3.1.6.3 Type of fuel used?</p>	<p>JET A-1</p>

3.1.7 Meteorological information

<p>3.1.7.1 Brief statement on the meteorological conditions appropriate to the circumstances including both forecast and actual conditions, and the availability of meteorological information to the crew</p>	<p>(a) Surface Wind: 170 Degree, 12 Knots (b) Vis: 6 Km; (c) QBB: Few, 1800 ft (d) QNY: Cloudy Sky (e) QNH: 1006.2 hpa (f) Temp: TT-32° C, Td Td-25° C</p> <p>N.B: Mereriological condition was not a factor in the incident.</p>
<p>3.1.7.2 Natural light conditions at the time of the accident (sunlight, moonlight, twilight, etc.)?</p>	<p>Sunlight</p>

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3.1.8 Aids to Navigation

3.1.8.1 Pertinent information on navigation aids available, including landing aids such as ILS, MLS, NDB, PAR, VOR, visual ground aids, etc., and their effectiveness at the time?	(a) DVOR – Serviceable (b) DME – Serviceable (c) NDB – Unserviceable (d) ILS – Serviceable
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3.1.9 Communications.

3.1.9.1 Pertinent information on aeronautical mobile and fixed service communications and their effectiveness?	ATC two-way communication was satisfactory. Other communication equipments were also serviceable.
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3.1.10 Aerodrome information

3.1.10.1 Pertinent information associated with the aerodrome, facilities and condition, or with the take-off or landing area if other than an aerodrome?	Adequate runway length with direction for take-off and landing 23-05 were available. Runway condition was dry and take-off was executed from runway 23.
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3.1.11 Flight recorders

3.1.11.1 Location of the flight recorder installations in the aircraft, their condition on recovery and pertinent data available therefrom?	The following two equipment were installed at the rear section of the aircraft. Both were found intact and were sent for Decoding: <ol style="list-style-type: none"> 1. Flight Data Recorder (FDR) Part No. S800-2000-00, SL No. 01342. 2. Cockpit Voice Recorder (CVR) Part No. 93-A100-83, SL No. 50613.
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3.1.12 Wreckage and impact information



3.1.12.1 General information on the site of the accident and the distribution pattern of the wreckage, detected material failures or component malfunctions. Details concerning the location and state of the different pieces of the wreckage are not normally required unless it is necessary to indicate a break-up of the aircraft prior to impact. Diagrams, charts and photographs may be included in this section or attached in the appendices	<p>(a) The left wheel assembly (No.1) PT No. PN: 59968565R got detached from wheel axle during take-off roll of aircraft S2-AHI on 05 June 2022, which was found near the end of runway 05 at VGEG. This wheel assembly was sent to VGCB with proper packaging and wrapping so that evidences were not lost.</p> <p>(b) The affected wheel was unpacked in front of the 'Go-Team', the photographs are shown below;</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Figure-1: Detached wheel assembly in packed condition.</p> </div> <div style="text-align: center;">  <p>Figure-1: Un-packing the wheel in front of 'Go-Team'</p> </div> </div>
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Figure-3: Inner side of the damaged wheel assembly.



Figure-3: Outer side of the damaged wheel assembly.

(c) The team carried out a detail inspection of the left wheel assembly and found the followings:

1. Locking bolt PT No. AN3H5A (Quantity 2) got broken/sheared off into two pieces. The upper part of both the locking bolts were attached with locking wire with the axle nut of the wheel assembly.

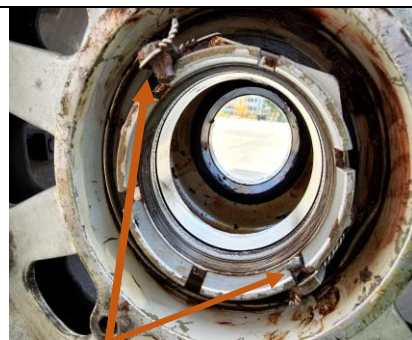


Figure-5: Upper part of the locking bolt attached with the locking wire of the wheel assembly



Figure -6: Upper part of the locking bolt with locking wire after removal from the wheel assembly.

(d) The outer bearing cone assembly PN. L610549 was found damaged, the outer race of the bearing got broken and 8 rollers came out from inside. Found traces of corrosion in rollers and housing of the bearing.



Figure-7: Damaged outer bearing.



Figure-8: Damaged Roller.

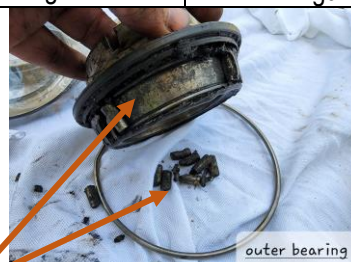


Figure-9: Traces of corrosion of roller and bearing.



(e) The team inspected the No.1 left wheel axle PT. No. D57259-2; found lower part of sheared off locking bolts were attached with the axle till the tip of the thread to the other end.

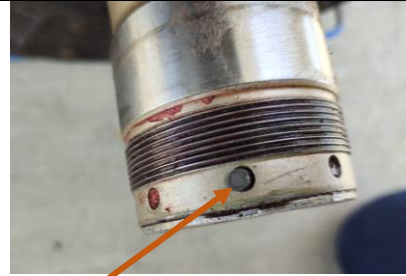


Figure-10: Lower part of the shearing locking bolt attached to wheel axle (Upper View)



Figure-11: Lower part of the shearing locking bolt attached to wheel axle (Lower View)

(f) Scratch marks were found on the shinning portion of the axle which was observed through out the shinning part circumferentially.

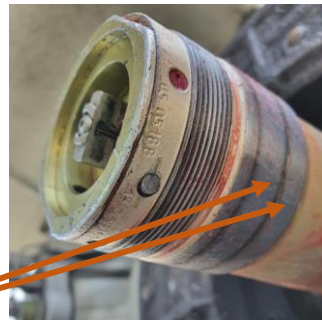


Figure-12: Scratch marks on the shinning portion of the axle through out the shinning part circumferentially

3.1.13 Medical and pathological information

3.1.13.1 Brief description of the results of the investigation undertaken and pertinent data available therefrom?	Medical examinations for pilots or any other personnel were not conducted as these were not required.
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3.1.14 Fire

3.1.14.1 If fire occurred, information on the nature of the occurrence, and of the firefighting equipment used and its effectiveness?	There was no evidence of fire.
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3.1.15 Survival aspects

3.1.15.1 Brief description of search, evacuation and rescue, location of crew and passengers in relation to injuries sustained, and failure of structures such as seats and seat-belt attachments?	The VGCB tower positioned 3 crash tender for any emergency but aircraft landed safely and taxied back to parking area. Nobody was injured. As such, evacuation and rescue operations were not involved.
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3.1.16 Additional Information

3.1.16.1 Relevant information not already included in 3.1.1 to 3.1.16?	Will be provided in the Final Report.
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3.2 ANALYSIS

3.2.1 Details on the Analysis

3.2.1.1 The analysis with regard to Man, Machine, Environment, Organizational, Motivational and any other Aspect will be provided in the Final Report.

3.3 CONCLUSION

3.3.1 Details on the Conclusion

3.3.1.1 The Conclusion with regard to Findings, Causes and Contributing Factors will be provided in the Final Report.

3.4 SAFETY RECOMMENDATIONS

3.4.1 Intermediary Safety Recommendations

3.4.1.1 Intermediary Safety Recommendations	<p>(a) One time inspection is to be carried out to check the condition, specially the presence of corrosion, crack or any other abnormality to all bearings (inner and outer and hub locking bolts in both main and nose landing gear wheel assemblies and necessary preventive action is to be taken as necessary. This is applicable to all operators of Bangladesh using ATR aircraft in their fleets.</p> <p>(b) The aircraft operating at Cox's Bazar are more susceptible to corrosion due to salinity. As such a preventive corrosion control program, if not already included in the corrosion preventive program in the aircraft maintenance schedule, may be introduced in the Aircraft Maintenance Programme (AMP) as a measure to prevent corrosion. This is applicable to all aircraft operating in Cox's bazar,.</p>
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3.4.2 Final Safety Recommendations

3.4.2.1 Final Safety Recommendations	Will be provided in the Final Report.
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4. APPENDICES

4.1 Details of Appendices

Has been preserved in a systematic manner in the 'Investigation Folder' held in the office of AAIC-BD.

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