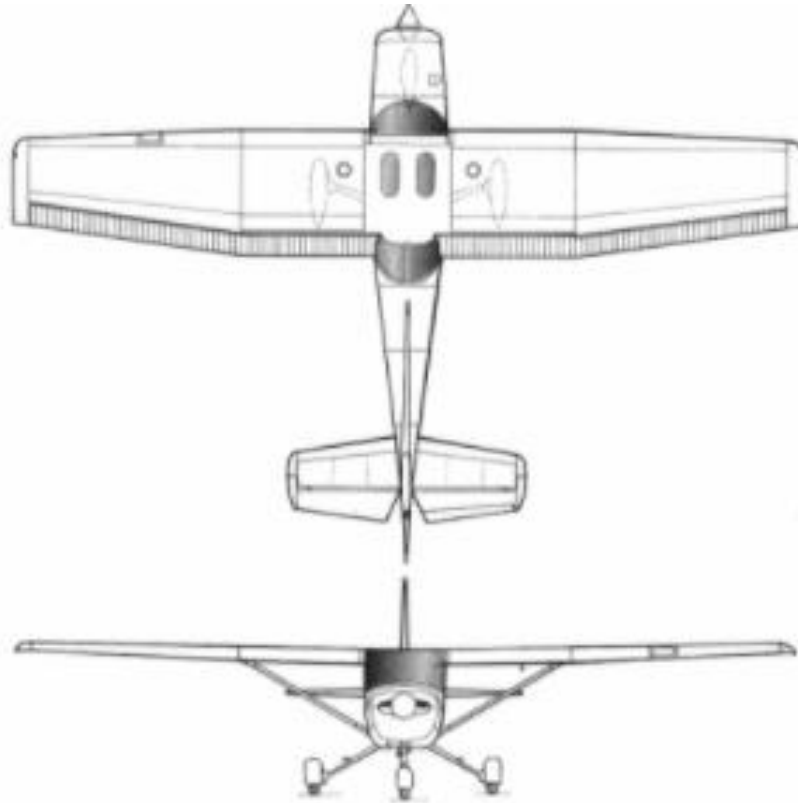




PRELIMINARY REPORT

INVESTIGATION INTO ACCIDENT OF CESSNA-152 AIRCRAFT REG NO S2-AGG
OF BANGLADESH FLYING ACADEMY AND GENERAL AVIATION LTD, OCCURRED ON 16 MARCH 2021
AT LALPUR, R345 DME11 FROM VGRJ AIRPORT, RAJSHAHI, BANGLADESH.



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

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INTRODUCTION

Preliminary Report of Investigation into Accident of Cessna-152 Aircraft, Reg No S2-AGG of Bangladesh Flying Academy and General Aviation Ltd that Occurred on 16 March 2021 at Lalpur, R345 DME 11 from VGRJ Airport, Rajshahi, Bangladesh

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

The Head of AAIC-BD received a telephone call from the Instructor Pilot (IP) of Bangladesh Flying Academy & General aviation Ltd, informing about an accident of one Cessna-152 trainer aircraft, Registration No. S2-AGG that made a forced landing at Lalpur, Redial 345, DME 11 from VGRJ (Rajshahi) Airport on 16 March 2021 at about 0825 UTC. The IP also informed that both the pilots were safe with slight minor injury to IP.

Following the information of occurrence, the Head of AAIC-BD immediately formed a 'GO-TEAM' comprising two investigators, one from operations and the other from engineering and, with a view to proceeding to the accident site availing the fastest possible means, advised them to proceed by the first available flight to Rajshahi to inspect and protect the necessary evidences. The 'GO-TEAM' left Dhaka for Rajshahi by the first flight on 17 March 2021 as there was no flight on the day of occurrence. 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 of VGRJ on telephone for ensuring adequate protection of the aircraft at Lalpur to protect all the evidences and safe custody of the aircraft and its contents until the arrival of the 'GO-TEAM' at the site of accident. The Head of AAIC-BD advised them to take the help of local administration and local police to protect the aircraft.

Thereafter, the Head of the AAIC-BD, on 17 March 2021, issued the necessary 'Notification' for the information of all concerned (National and International) as per the requirements of Annex 13.

Subsequently, the Head of the AAIC-BD formed two-member Aircraft Accident Investigation Team (AAIT) by issuing a 'Memorandum' to conduct the investigation. The two-member comprised Member Engineering of AAIC-BD as Investigator-in-Charge (IIC) and the Member (Operation) of AAIC-BD as the Member of Investigation.

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

The AAIT will continue to investigate into the accident until the 'Final Report' is compiled. Thereafter, the AAIC-BD shall, in the interest of accident prevention, make the 'Final Report' publicly available as soon as possible and, if possible, within twelve months, to comply with Standard 6.5 of Annex 13.

Head
Aircraft Accident Investigation Committee
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REF. NO. 30.00.0000.013.33.005.21 (CESSNA-152/S2-AGG/ 16 MAR 2021)-65

DATE OF PUBLICATION: 13 APRIL 2021

Chapter	Subject Head	Subject Description	Section		
1.	Title		1.1.1 – 1.1.7		
2.	Synopsis		2.1.1 - 2.1.8		
3.	Body	3.1 Factual Information	3.1.1 History of Flight 3.1.2 Injuries to Personnel 3.1.3 Damage to Aircraft 3.1.4 Other Damage 3.1.5 Personnel information 3.1.6 Aircraft Information 3.1.7 Meteorological Information 3.1.8 Aids to Navigation 3.1.9 Communication 3.1.10 Aerodrome Information 3.1.11 Flight Recorders 3.1.12 Wreckage and Impact Information 3.1.13 Medical and Pathological Information 3.1.14 Fire 3.1.15 Survival Aspect 3.1.16 Test and Research 3.1.17 Organizational & Management Information 3.1.18 Additional Information 3.1.19 Useful/ Effective Investigation Techniques	3.1.1.1–3.1.1.10 3.1.2.1 - 3.1.2.3 3.1.3.1 – 3.1.3.5 3.1.4.1 3.1.5.1 - 3.1.5.3 3.1.6.1 - 3.1.6.3 3.1.7.1 - 3.1.7.2 3.1.8.1 3.1.9.1 3.1.10.1 3.1.11.1 3.1.12.1 3.1.13.1 3.1.14.1 3.1.15.1 3.1.16.1 3.1.17.1 3.1.18.1 3.1.19.1	
		3.2 Analysis	3.2.1 Man 3.2.2 Machine 3.2.3 Environment 3.2.4 Organizational & Motivational Aspect	3.2.1.1 3.2.2.1 3.2.3.1 3.2.4.1-3.2.4.2	
		3.3 Conclusions	3.3.1 Findings 3.3.2 Causes 3.3.3 Contributing Factors	3.3.1.1 3.3.2.1 3.3.3.1	
		3.4 Safety Recommendations	3.4.1 Intermediary Safety Recommendations 3.4.2 Safety Recommendations	3.4.1.1 3.4.2.1	
		4.	Appendices		

1. TITLE

1.1.1 Name of Operator	Bangladesh Flying Academy and General Aviation Ltd.
1.1.2 Name of Manufacturer	Cessna
1.1.3 Aircraft Model	Cessna-152
1.1.4 Aircraft Nationality	Bangladesh
1.1.5 Aircraft Registration Marks	S2-AGG
1.1.6 Place of Occurrence	Lalpur, Tanore Upazilla R345 DME11 From VGRJ Airport, Rajshahi
1.1.7 Date of Occurrence	16 March 2021

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2. SYNOPSIS

<p>2.1.1 Executive Summary</p>	<p>(a) Bangladesh Flying Academy and General Aviation Ltd, an approved Aviation Training Organization of CAA Bangladesh, provides academic, basic, instrument and instructor rating ground and flight trainings to the ab-initio and other students to attend the required standard for issuance of relevant licenses, such as Private Pilot license (PPL), Commercial Pilot License (CPL) and Flight Instructors License (FIR). The company operates its training flights from its operational base, located at VGRJ (Shah Makhdum Airport), Rajshahi, Bangladesh.</p> <p>(b) As a part of the flying program, the Chief Flying Instructor (CFI) of the company was scheduled on 16 March 2021 to take-up a Student Pilot (SP) for PPL- Navigation Check Flight with a Cessna-152 aircraft, Registration, S2-AGG.</p> <p>(c) The flight was conducted in Visual Meteorological Condition (VMC) under Visual Flight Rules (VFR) at 1000' AGL.</p> <p>(d) After the aircraft had flown about 0:45 hrs from the time of departure, the SP reported that the aircraft was vibrating. The CFI took over the control and decided to go back to the Base, Rajshahi (VGRJ).</p> <p>(e) The CFI observed that vibration was increasing, followed by the decrease of engine oil pressure and simultaneous increase of engine oil temperature. The CFI also noticed engine power loss that resulted the aircraft losing heights.</p> <p>(f) The aircraft's engine failed at about 300' AGL and the flight crew gave 'Mayday' call and forced-landed the aircraft on a potato field at Lalpur at a radial of 345^o, DME 11 NM from VGRJ.</p> <p>(g) During ground roll, the aircraft hit an elevated aisle that resulted the breakage and detachment of the nose landing gear, which eventually made the fuselage to topple over and finally resting upside-down on the potato field.</p> <p>(h) Evidently, there was neither any fire nor any personnel injury as a result of this accident, except that the CFI received a very minor fore-head cut injury while evacuating the aircraft.</p> <p>(i) The local fire vehicles reached the incident spot within a few minutes of the accident and left the place of occurrence after staying at the site for sometimes.</p> <p>(j) Soon after the AAIC-BD learnt about the accident, it ensured through telecommunication with the responsible personnel of VGRJ and local authorities that the crash-site is properly secured and guarded so as to keep the aircraft wreckage and other evidences undisturbed for onward investigation by the investigators of AAIC-BD.</p> <p>(k) The AAIC-BD ensured that the assigned 'Go-Team' reach the accident site at the earliest possible time through quickest means possible to have the required inspection done of the wreckage and the surroundings to carry out the necessary field investigation.</p> <p>(l) The AAIC-BD sent the necessary 'Notifications' to all concerned Authorities and Agencies as per Standard 4.1 of ICAO Annex 13 and immediately following that, issued 'Memorandum' by appointing a 'two-member' Aircraft Accident Investigation Team' (AAIT), one been appointed as Investigator-in-Charge (IIC) to conduct full-length investigation.</p> <p>(m) According to Standard 7.4 of ICAO Annex 13, a 'Preliminary Report' is required to be published as</p>
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	<p>early as possible, but not later than 30 days following the date of an occurrence. The AAIC-BD, herein publishes this 'Preliminary Report', which is being sent to all concerned. The report shall be displayed in the public website: http://caab.portal.gov.bd/ (Menu: AAIC-BD).</p> <p>(n) Next step: The AAIC-BD shall, in the interest of accident prevention, make the 'Final Report' publicly available as soon as practicable and, if possible, within twelve months, to comply with Standard 6.5 of Annex 13.</p>
2.1.2 Accident Investigation Authority?	Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD).
2.1.3 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.
2.1.4 Accredited Representation?	<p>(a) Having received the Notification from the AAIC-BD, the NTSB responded immediately and confirmed that they would remain standby for any kind of support, should the AAIC-BD require;</p> <p>(b) After visiting the place of accident and having inspected the wreckage and quick field investigation, the AAIT assumed that the aircraft's engine failure could be resulted due to total starvation of engine oil. Visual check by the investigators revealed no damage to the hoses of pressure and return line but traces of oil was detected underneath the fuselage starting from exhaust of the breather line till end of fuselage (bottom side and in the installation bolt of No. 2 cylinder and many other places).</p> <p>(c) Presumably, as the engine had failed due to oil leakage and the internal status of the engine remained unknown to AAIT, it was decided to consult with the manufacturer through accredited representative of NTSB to get their opinion for further steps to find out the reason of oil leakage.</p> <p>(d) Accordingly, the AAIT has already requested NTSB to assign 'US Accredited Representative' (ACCREP) to provide assistance on this issue. The NTSB, has nominated an Accredited Representative who has been included in the investigation by the AAIT.</p> <p>(e) The AAIT has also apprised the US-ACCREP about the AAIT's intention, and accordingly, sent the related 'Photographs' of the affected damaged aircraft, oil leakage area, especially the oil traces underneath the fuselage etc., for onward comments by NTSB and/or the Manufacturer.</p>
2.1.5 Organization of the Investigation?	Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD)
2.1.6 Authority releasing the report?	Aircraft Accident Investigation Committee of Bangladesh (AAIC-BD)
2.1.7 Date of publication of report?	13 April 2021.
2.1.8 Brief resume of the circumstances leading to the accident?	<p>(a) The flight was conducted in Visual Meteorological Condition (VMC) under Visual Flight Rules (VFR) at 1000' AGL.</p> <p>(b) The aircraft was flown for about 0:45 hrs uneventfully from the time of departure. Thereafter, the aircraft developed some engine vibration followed by decrease of engine oil pressure and increase of engine oil temperature as well as loss of engine power. Eventually the aircraft engine failed at a height of 300' AGL.</p> <p>(c) The flight crew gave 'Mayday' (Emergency) call and forced-landed the aircraft on a potato growing field at Lalpur at a radial of 345^o, DME 11 NM from VGRJ.</p> <p>(d) During ground roll, the aircraft hit an elevated aisle that resulted the breakage and detachment of the nose landing gear, which eventually made the fuselage to topple over and finally resting upside-down on the potato growing field.</p> <p>(e) Evidently, there was neither any fire nor any personnel injury as a result of this accident, except that the CFI received a very minor fore-head cut injury while evacuating the aircraft.</p>

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3. BODY

3.1 FACTUAL INFORMATION

3.1.1 History of Flight

3.1.1.1 Flight number?	S2-AGG
3.1.1.2 Type of operation?	PPL- NAV Check Flight
3.1.1.3 Last point of departure?	VGRJ, Rajshahi, Bangladesh.
3.1.1.4 Time of departure (Local or UTC)	0716 UTC
3.1.1.5 Point of intended landing?	VGRJ, Rajshahi
3.1.1.6 Description of the flight and events leading to the accident?	<p>(a) As a part of the flying program, the Chief Flying Instructor (CFI) of the company, as Instructor Pilot (IP) was scheduled on 16 March 2021 to take-up a Student Pilot (SP) for PPL- Navigation Check Flight with a Cessna-152 aircraft, Registration S2-AGG.</p> <p>(b) The flight was conducted in Visual Meteorological Condition (VMC) under Visual Flight Rules (VFR).</p> <p>(c) The aircraft took-off at 07:25 UTC for Navigation-Check Flight on Rajshahi-Naogaon-Nachol-Rajshahi route. They were maintaining 1000' AGL. The aircraft set course at 07:26 for Naogaon 30 NM ETA 07:47 and after reaching Naogaon, set course for Nachol 27 NM ETA 08:06 and arrived at 08:08 UTC. At this point IP asked SP to divert towards Rohanpur, located at 07 NM from Nachol. Accordingly, SP set course for Rohanpur, estimating arrival at 08:13 UTC.</p> <p>(d) From set course from Nachol, after 2-3 minutes of flying, the SP reported that the aircraft was vibrating. The IP immediately took over the control and decided to go back to the Base, Rajshahi (VGRJ). Accordingly, the aircraft set course for Rajshahi which was 22 NM from VGRJ, while maintaining 1000'.</p> <p>(e) After a while, the IP observed that vibration was increasing, followed by the decrease of engine oil pressure and simultaneous increase of engine oil temperature. The IP observed engine power loss that resulted the aircraft losing heights as well.</p> <p>(f) At 14 NM away from VGRJ, the IP contacted Rajshahi tower and reported about the aircraft vibration, low oil pressure, high oil temperature. The VGRJ tower controller replied to have copied the message and advised aircraft to report final runway 17.</p> <p>(g) At 08:21 UTC, S2-AGG reported losing height with low oil pressure and low engine power. In reply, the tower controller advised the aircraft to maintain own comfortable situation and to report final runway 17.</p> <p>(h) At 08:22 UTC, S2-AGG reported R 345, 12 DME at 500-600' and called 'MAY DAY', and decided to make full-stop landing at VGRJ.</p> <p>(i) As the aircraft height was further decreasing, the flight crew started looking for suitable ground area to make forced-landing.</p>

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REF. NO. 30.00.0000.013.33.005.21 (CESSNA-152/S2-AGG/ 16 MAR 2021)-65

DATE OF PUBLICATION: 13 APRIL 2021

- (j) The whole ground area was built up with electric pylons, vegetation specially potato fields, water machine, ditches and Sacks of potato bags etc.
- (k) While looking for landing area, at 300', the aircraft's engine failed. In this situation they found a potato field, made a forced landing at a potato field at Lalpur at a radial of 345^o, DME 11 NM from VGRJ.
- (l) The potato fields were even but having aisles (slightly 2-3' raised, used for the separation of two adjacent lands) in between.
- (m) The aircraft travelled 126.5 M from the point of touch down and hit an elevated aisle that resulted the breakage and detachment of the nose landing gear of the aircraft.
- (n) The aircraft further travelled 19 M from the detached point of NLG, resulting fuselage to topple over the aircraft nose which finally rested upside-down on the potato field.
- (o) The aircraft covered total 145.5 M from touchdown point to its rested position.
- (p) At this stage, IP instructed the SP to go out of the cockpit and subsequently the IP also came out from the cockpit using the side doors of the aircraft. The SP didn't have any physical injury but the IP had very minor fore-head injury (Cut mark on the nose) while evacuating the aircraft.
- (q) Meanwhile, the local fire vehicles reached the incident spot within a few minutes of the accident. As there was neither any fire of the aircraft or associated surroundings, nor there was any significant personal injury to anybody, the fire vehicles left the place of occurrence after staying at the site for sometimes.
- (r) As there was a huge mob from the adjacent locality who reached the place of occurrence to see the accident aircraft, the local police and civil aviation security cordoned the aircraft, provided security and safety of the aircraft and relevant evidences.
- (s) The Go-Team reached the accident site on 17th March 2021 and had an in-depth inspection of the wreckage and surroundings as a part of field investigation.
- (t) After visiting the place of accident and having inspected the wreckage and quick field investigation, the AAIT assumed that the cause of the accident could be the total loss of engine oil. Some visual checks were carried to find out the cause of leakage of engine oil system. Although, apparently no damage could be found to the hoses of pressure and the return line, trace of oil was detected underneath the fuselage starting from exhaust of the breather line till end of fuselage (bottom side), in the installation bolt of No. 2 cylinder and many other places.
- (u) The AAIT has also apprised the US-ACCREP about the AAIT's intention, and accordingly, sent the related 'Photographs' of the affected damaged aircraft, oil leakage area, especially the oil traces underneath the fuselage etc., for valuable comment of NTSB.

Note: The AAIT, will continue to conduct further in-depth investigation on the following aspects and will include extended information on the above-mentioned points in the 'Final Report':

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- (a) Determine the present status of engine, reason for oil leakage etc., following receipt of the comment from Manufacturer through accredited representative.
- (b) Determine the integrity of structure of the aircraft.
- (c) possibility of repairing the damages of the major component of the aircraft, considering its airworthiness viability.
- (d) Any other points etc.

3.1.1.7
 Reconstruction of the significant portion of the flight path?

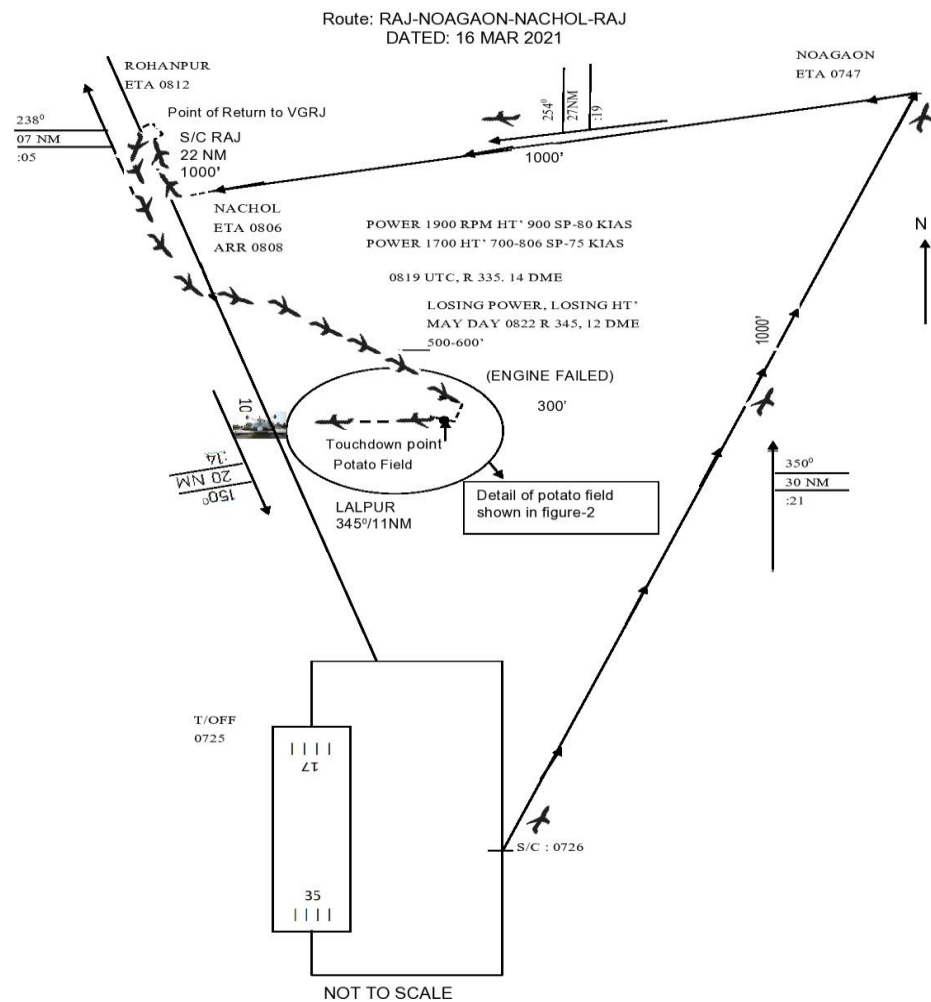


FIGURE-1: FLIGHT Route: RAJ-NOAGAON-NACHOL-LALPUR (Forced Landing)

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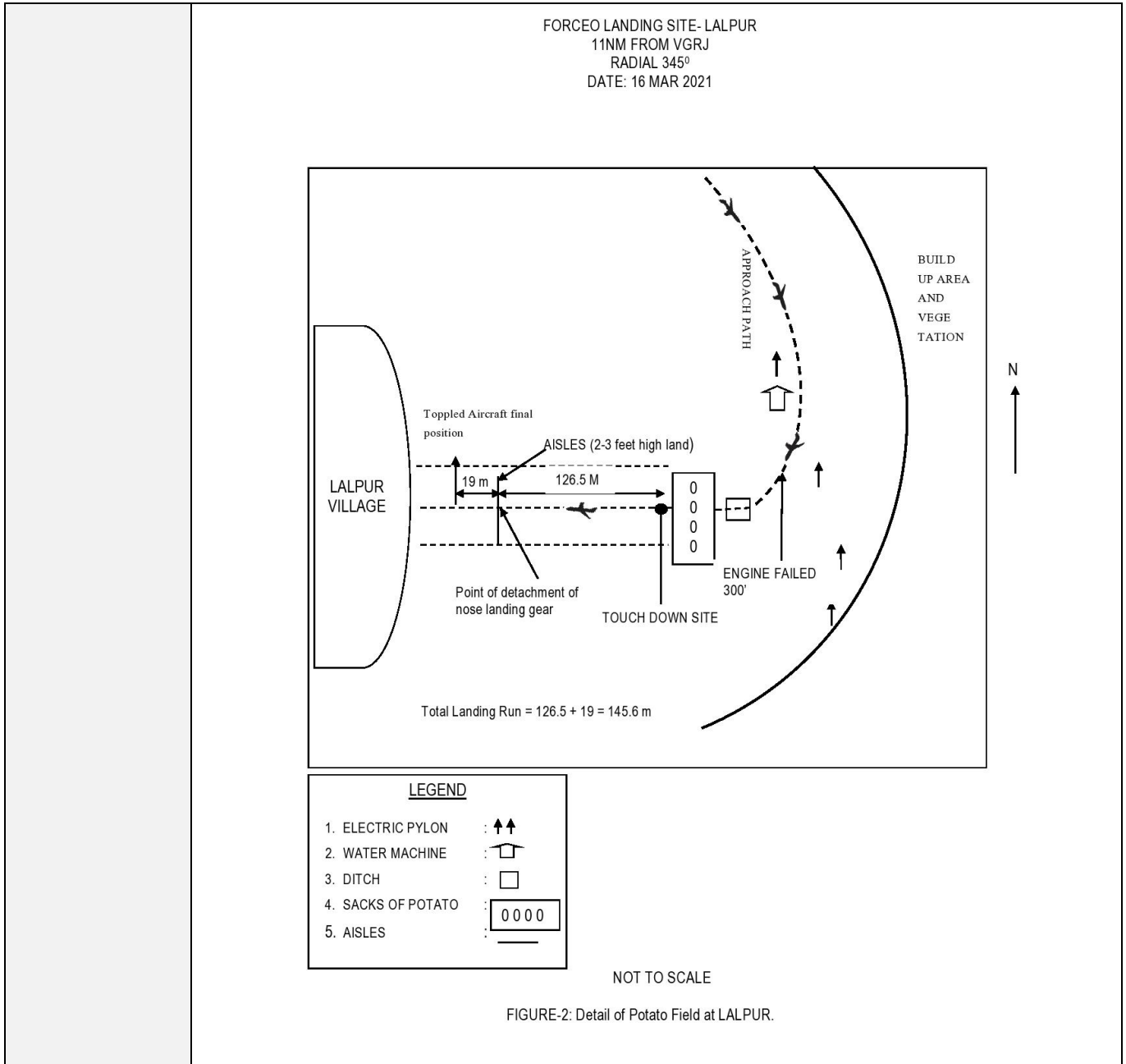


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3.1.8 Location (latitude, longitude, elevation)?	Lalpur, Tanore Upazilla R345 DME11 From VGRJ Airport, Rajshahi, Bangladesh (a) Latitude: 23.977981 N (b) Longitude: 88.684875 E (c) Elevation: 55 Feet
3.1.1.9 Time of the accident (Local or UTC)?	0825 UTC
3.1.1.10 Whether day/night?	Day

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3.1.2 Injuries to Persons

Injuries	Crew	Passenger	Others
3.2.1 Fatal?	No	N/A	N/A
3.2.2 Serious?	No	N/A	N/A
3.2.3 Minor?	YES (Instructor Pilot got Minor Injury)	N/A	N/A

3.1.3 Damage to Aircraft (Brief description)

3.1.3.1 Destroyed?	No				
3.1.3.2 Substantially damaged?	Yes, as described below:				
	S/N	Nomenclature	Part No.	Figure No. from IPC	Page No. of IPC
	01	Nomenclature	0450073-1	60	230
	02	Propeller (McCauley) both tips bent with shaft	1A103/TCM	60-1	230
	03	Lycoming Engine, type & Model 0-235-L2C	S/N. L-146476-15	OH manual 1-1	1-1
	04	Mount Assembly, Engine	0451003-36	62-6	248
	05	Nose Landing Gear broken, (Strut Assy. Nose Gear)	0442504-13	34	128
	06	Bearing Rod end	S1823-3	33	126
	07	VOR Antenna & Beacon light.	KX 155/165 Manual #.006-0579-0006		
	08	VHF Rt. Antenna broken	KX-155/165		
	09	Wind shield broken	0413419-201	32	124
	10	Engine bearer bent (Left side) Eng. Mound assy.	0451003-36	62	246
	11	Breather line plastic portion broken.	0400343-13	62	246
	12	Oil cooler hose cap assembly bent.	MS20825-60	63A	256
	13	Upper portion of the Rudder broken (Vertical stabilizer Fin)	0430011-1	22	190
	14	Right wing damaged	0523565	4	28
	15	Horizontal stabilizer both left & right damaged	0432001-23	21A	86
	16	Line assembly fuel	0400311-79	81-50	318
	17	Fairing assembly Main gear (Left)	0441217-215	38-37	134
	18	Fairing assembly Main gear (Right)	0441217-214	38-37	134
	19	Aileron Assy. Left	0523800	15-17	61/62
	20	Aileron Assy. Right	0523800-1	15-17	61/62
	21	Wing assy. Complete (LH. & RH) standard range	Nil	3	24
	22	Elevator Assy. Left	0432001-51	21	6A
	23	Elevator Assy. Right	0432001-52	21	6A

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	24	Fuselage (Skin Left)	0413004-35	27-11	105
	25	Fuselage (Skin Right)	0413004-36	27-11	105
	26	Fairing strut lower RH.	0421002-2	17	14
3.1.3.3 Slightly damaged?	N/A				
3.1.3.4 Other damage?	N/A				
3.1.3.5 Damage to Runway	N/A				

3.1.4 Other Damage:

3.1.4.1 Other Damage	NIL
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3.1.5 Personnel information

<p>3.1.5.1 Pertinent information concerning each of the flight crew members regarding age, validity of licenses, ratings, mandatory checks, flying experience (total and on type) and relevant information on duty time?</p>	<p>Pilot in Command</p> <ul style="list-style-type: none"> (a) Date of Birth: 31 Dec 1964 (b) Age: 57 (c) Nationality: Bangladeshi (d) License: CPL NO – 210 (e) Ratings: Flight Instructor (f) Mandatory Checks: Flight Instructor & Instrument Rating (g) Flying Experience (Total): 5088:45 Hours (h) Flying Experience on type: 4032:30 Hours (i) License Validity: 30 Sep 2021 (j) Medical Status: Class – 1 (One) 	<p>Student Pilot</p> <ul style="list-style-type: none"> (a) Date of Birth: 12 Feb 1999 (b) Age: 22 (c) Nationality: Bangladeshi (d) License: SPL – BFA/109 (e) Ratings: N/A (f) Flying Experience (Total): 43:00 Hours (g) Flying Experience on type: 43:00 Hours (h) License Validity: 01 Jul 2021 (i) Medical Status: Class – 2 (Two)
3.1.5.2 Brief statement of qualifications and experience of other crew members?	N/A	
<p>3.1.5.3 Pertinent information regarding other personnel, such as air traffic services, maintenance, etc., when relevant?</p>	<p>Air Traffic Services</p> <ul style="list-style-type: none"> (a) Air Traffic Controller-2; (b) Aerodrome Operator-1; (c) Fire Fighter-05; (d) Crash Tender Serviceable (but very old, water leakage at various point); (e) Fire fighter dress available 05 sets (03 good shape, but 02 poor condition); (f) Walkie Talkie set for communication was available; (g) Emergency drill practiced: weekly 03-days; (h) Fire Observatory Tower – Available, but not manned. 	<p>Maintenance Services</p> <ul style="list-style-type: none"> (a) Wind-sock, Runway 35 side was not effective; (b) Wind-sock, Runway 17 side was effective; (c) A lot of pebbles in the middle portion of the Runway surface observed.

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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 Cessna Model-152 Registration No. S2-AGG, MSN 15284604 has completed 12513:20 Hrs on 16 March 2021. The aircraft was manufactured in February 1979 and was registered in Bangladesh on 31 August 2010. (b) The engine type Lycoming, Model 0-235-L2C, SI No. L-16476-15 was installed on 18.08.2020 with 0:0 hrs after overhaul; completed 459:45 hrs till 16.03.2021. (c) The Check-I was carried out from 13-15 December 2020, vide Work Order No GFA/57/20 dated 13 December 2020; (d) The Maintenance Release was issued vide No. 06/2020. (e) This maintenance release is valid for 60 days up to 12 February 2021 or 100 flight hours, whichever occurs earlier. (f) The next maintenance release is due on 13 December 2021. (g) Quality assurance was carried out on 15 December 2021 by the Company Quality Assurance Manager. (h) The aircraft Cessna S2-AGG carried out two missions on 16 March 2021 prior to this accident. (i) The origination (pre-flight) check was duly carried out by the licensed engineer and went for first mission for 1:25 Hrs. (j) The aircraft was again prepared for next mission by carrying out transit check (through flight) and handed over for the flight crew. (k) As per maintenance log, there was no defect known prior to and during the flight. (l) As per the document, no airworthiness directives/service bulletins were due to this aircraft. (m) The certificate of airworthiness of the aircraft Cessna-152, S2-AGG has been renewed by CAAB and is valid till 28 October 2021. (n) There was verbal entry on S2-AGG of mild vibration by another pilot on 15th March 2021. The same aircraft had observation on idle RPM after the first sortie on 16th March 2021. Details will be provided in the final report.
<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>100 LL Grade Aviation Fuel (Blue) and 100 (Formally 100/130) Grade Aviation Fuel (Green)</p>

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



REF. NO. 30.00.0000.013.33.005.21 (CESSNA-152/S2-AGG/ 16 MAR 2021)-65

DATE OF PUBLICATION: 13 APRIL 2021

3.1.7 Meteorological information

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?	(a) Surface Wind: 300 degree, 10 knots (b) Vis: 7 Km; (c) QBB: NSC (d) QNY: Hz (e) QFE: 1007.9 (f) QNH: 1009 (g) Temp: 33 Degree C (h) Crew received the Met Information. (i) Hourly weather forecast is available at weather office at VGRJ Terminal Building.
3.1.7.2 Natural light conditions at the time of the accident (sunlight, moonlight, twilight, etc.)?	Sunlight.

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) NDB RJ 228 KHZ H24 242632.87N 0883649.35E (Serviceable); (b) DVOR RAJ 114.6 MHZ H24 242621.18N 0883654.10E (Serviceable); (c) VORDME RAJ 1180 MHZ H24 242621.18N 0883654.10E (Serviceable); (d) VASI: Available on both RWY. (e) Wind Sock: Serviceable on RWY 17 side; Unserviceable on RWY 35 side.
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3.1.9 Communications.

3.1.9.1 Pertinent information on aeronautical mobile and fixed service communications and their effectiveness?	Aerodrome Control Service Rajshahi Tower 128.3 MHZ - Tower communication equipment was reported to be 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?	(a) VGR ARP co-ordinates AD 242619.39N 0883658.56E; (b) Distance and direction from city 07 KM North of Town; (c) AD elevation / reference temperature 55FT/400 C; (d) MAG VAR 50' W;
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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?	N/A (Not installed)
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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.	(a) The aircraft forced landed on potato fields at Lalpur, Radial 345 ^o DME 11 NM from VGRJ. (b) After touch down, it covered 126.5 M landing run and hit the aisles (2-3' high), where the nose landing gear got broken and detached from the aircraft (figure-1 A). (c) Following the detachment of the nose landing gear, the aircraft travelled 19M, resulting
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REF. NO. 30.00.0000.013.33.005.21 (CESSNA-152/S2-AGG/ 16 MAR 2021)-65

DATE OF PUBLICATION: 13 APRIL 2021

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?

the fuselage to topple over the aircraft nose and rested up-side down Shown below was the final stop down point of the aircraft (Figure-1 B).

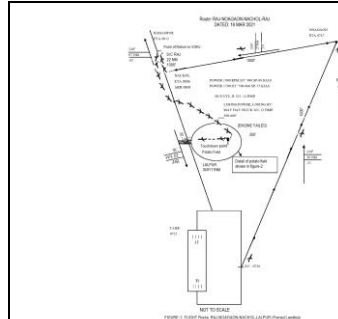


Figure-1 (A)

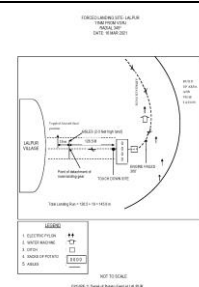


Figure-1 (B)

(d) The aircraft sustained the following damage:

1. Both edges of the propeller bended. (Figure-2)
2. Nose landing gear broke and got detached (Figure-3)
3. Cracks and deformation of both wing surface in several place (Figure-4)
4. Lower tube of oil breather line got broken (Figure-4)
5. Top of the vertical stabilizer and rudder assemblies broke (Figure-5)
6. Deformation of surface of horizontal stabilizer (Figure-6)



Figure-2



Figure-3



Figure-4



Figure-5



Figure-6



Figure-7

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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?	IP got minor injury, was given first aid. SP was unhurt.
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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?	N/A
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3.1.16 Tests and research

3.1.16.1 Brief statements regarding the results of tests and research?	To be provided in the final report.
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3.1.17 Organizational and management information

<p>3.1.17.1 Pertinent information concerning the organizations and their management involved in influencing the operation of the aircraft. The organizations include, for example: the operator; the air traffic services; airway, aerodrome and weather service agencies; and the regulatory authority. The information could include, but not be limited to, organizational structure and functions, resources, economic status, management policies and practices, and regulatory framework?</p>	<p><u>Bangladesh Flying Academy and General Aviation Ltd - At a Glance as on 30th March 2021</u></p> <ol style="list-style-type: none"> 1. Some of the interested and enthused personnel in aviation decided to form a club to organize pilots training in East Pakistan. As such East Pakistan flying club Ltd was formed and incorporated under Indian company act of VII of 1913 Company was registered in May 1948. 2. After liberation of Bangladesh, the flying club was renamed as Bangladesh flying club Ltd. 3. Again, Bangladesh flying club Ltd was renamed as Bangladesh Flying Academy and General Aviation Ltd in 2004. 4. From the inception of the organization, it was registered as Public limited company 5. BFA and GA has an approved Memorandum of understanding and articles of association by the Registrar, Joint stock companies under companies Act 1994. 6. It provides training for: <ol style="list-style-type: none"> (a) PPL (b) CPL (c) CPL conversion. (d) FIR 7. This company has a total of 400 life members of different categories 8. BFA has no shareholder or Investor or donors for financial support 9. Its operation and financial expenditure solely depend on income from the students. 10. An executive committee elected by the life members for a tenure of two years. 11. The executive committee is headed by a President, with 3 Vice Presidents, General Secretary, Joint Secretary and 5 members 12. All administrative and financial decisions are taken by the President and or Secretary General within their limitation and in executive committee meeting 13. The principal office of the BFA at Dhaka: Hazrat Shahjalal International Airport, Kurmitola 14. Operational base at Rajshahi, Shah Makhдум Airport. 15. At present BFA has two aircraft: S2-AGG and S2-ADQ <ol style="list-style-type: none"> (a) S2-ADQ: grounded- need an engine to be installed (b) S2-AGG: recent forced landed at Lalpur, Rajshahi and under investigation 16. Number of Flight Instructors: Full time-2 and Honorary- 2 17. Ground Instructors: full time- 1 and Guest Speakers -10
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	<p>18. Total students:82(including 3 CPL conversion students)</p> <p>19. Status of the students:</p> <p style="margin-left: 40px;">(a) Completed ground courses:17</p> <p style="margin-left: 40px;">(b) PPL;45</p> <p style="margin-left: 40px;">(c) CPL:17</p> <p style="margin-left: 40px;">(d) CPL conversion :3</p> <p>20. Room facility: Two Class for CPL and PPL course of student capacity 26 and 14 respectively</p> <p>21. Audio- visual training Aids: Overhead Projectors and Portable Sound System</p> <p>22. Record of all students: All student records are maintained both in Ground Section Dhaka and Operations section at Dhaka and Rajshahi base</p> <p>23. Number employee: 29</p> <p>24. Accommodation: BFA provides accommodation to all students and Flight Instructors at Rajshahi operational base</p> <p>25. Hangar and aircraft maintenance facility: BFA has hangar and maintenance facility at Dhaka and also at Rajshahi base with Galaxy Flying Academy under an agreement.</p>
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3.1.18 Additional information

3.1.18.1 Relevant information not already included in 3.1.1 to 3.1.16?	To be provided in the final report.
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3.1.19 Useful or effective investigation techniques

3.1.19.1 When useful or effective investigation techniques have been used during the investigation, briefly indicate the reason for using these techniques and refer here to the main features as well as describing the results under the appropriate subheadings 3.1.1 to 3.1.17?	<p>(a) The investigation techniques used by the AAIT in conducting this investigation have been adopted as per the instructions provided in ICAO Annex-13, Appendix-1, Para-1.19 and that of Doc-9756, Part-4, Para-1.19.</p> <p>(b) So far, no new useful or investigation technique has been merged at this stage of the investigation other than what is mentioned in (a). However, should the AAIT use any new useful or investigation technique, the same will be included through 3.1.1 to 3.1.18 in the investigation 'Final Report' and/or, will include as an Appendix to the 'Final Report', as specified in ICAO Doc-9756, Part-4, Para-1.19.</p>
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3.2 ANALYSIS

The following analysis has been made based on the information documented in ‘Factual information’ and which is relevant to the ‘Determination of Conclusions’ and ‘Causes and/or Contributing Factors’.

3.2.1 Man

3.2.1.1 Man?	<p>Instructor Pilot (IP) or CFI</p> <p>(a) Has the responsibility as Chief Flight Instructor (CFI) of BFA & GA Ltd to ensure regulatory and company compliance with regard to flight crew training.</p> <p>(b) There was a verbal entry on S2-AGG of mild vibration by another pilot, which was intimated to CFI and maintenance engineer on 15 March 2021.</p> <p>(c) CFI carried out the next sortie with the same aircraft on 15 March 2021.</p> <p>(d) Aircraft S2-AGG was again flown on 16 March 2021 by another pilot and he had an observation on idle RPM. Again, it was intimated verbally to CFI and Maintenance engineer.</p> <p>(e) The IP went with SP on Navigational Check Flight on Rajshahi-Naogaon-Nachol-Rajshahi after crossing Nachol, on the way to Rohanpur, SP reported vibration with pressure lowering & temperature increasing of oil system. Immediately IP took over the control and decided to return back to Base. While returning he was maintaining 1000’ but after a while, aircraft was losing height and power. At about 12 NM away from VGRJ, aircraft lost height to 500-600’; at the stage IP gave informed tower and gave a ‘May Day’ call. As there was no alternate but to land, IP tried to find a suitable place to land. But the area had a build up with vegetation, electric lines, ditches etc. At this stage at 300’ the engine failed. In this situation IP managed to cross those obstacles and forced landed on potato fields. The effort of safe landing is commendable by the IP. However, he could land with flaps’ on.</p> <p>Note: The AAIT will continue to conduct further in-depth investigation and will include extended information in the final report.</p> <p>Student Pilot</p> <p>The Student Pilot (SP)</p> <p>(a) The student Pilot (SP) had total Hrs: 43:00 Hrs after oral and ELP test, he went to Rajshahi for Check Flight on 08 March 2021. As he was away from flying for more than 06 months, he went for carrying flying for 45 minutes on 16th March, followed by General Flying (1 Hour) and Nav check (1:05 hrs) was his third sortie.</p> <p>(b) On the way to Rohanpur after crossing Nachol the SP observed vibration and reported to IP.</p> <p>Air Traffic Controller</p> <p>(a) On 16th March 2021 duty controller was on duty from 0700-1230 UTC. He gave the start up to S2-AGG at 07:16 UTC.</p>
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REF. NO. 30.00.0000.013.33.005.21 (CESSNA-152/S2-AGG/ 16 MAR 2021)-65

DATE OF PUBLICATION: 13 APRIL 2021

- (b) At 08:16 UTC, S2-AGG reported 20 DME maintaining 1000’.
- (c) At 08:19 UTC, Radial 335, 14 DME, 1000’AGL, S2-AGG reported engine vibration, pressure loss, temperature high. Duty controller advised to report final RWY-17. He informed APM, make fire vehicle fully standby.
- (d) AT 08:21 UTC, S2-AGG reported decrease of low oil pressure and lessening of engine power. In response, the ATC advised S2-AGG to maintain own comfortable situation and to report final RWY-17.
- (e) At 08:22 UTC, S2-AGG reported R-345, 12 DME; called ‘May Day’, ‘May Day’, ‘May Day’ and informed to make full stop landing.
- (f) At 08:25 UTC, finally S2-AGG made forced landing at Lalpur radial 345, 11 DME.
- (g) After a while, at 08:26 UTC, the IP came over tower mobile phone and reported that they were on ground (potato field), no fire and no injury. They are safe.
- (h) The duty controller informed the airport Police Station (PS) requesting to pass the message to Tanore PS for safety and security of the personnel and aircraft.
- (i) The ATC duty controller also informed the fire vehicle of Tanore Civil Defense to move to the spot for facing any emergency situation.
- (j) The duty controller also found his relative from the locality to provide support required for safety two pilot and aircraft.
- (k) The action taken by duty controller is really commendable. He went beyond his official responsibility and his relative to provide support for safety and security of aircraft and pilot.

Company Maintenance Engineer/ Manager & Quality Assurance Manager

1. Company Maintenance Engineer/ Manager

- (a) Company maintenance engineer was on duty on 16th March 2021, He was also the maintenance manager of BFA & GA. He was a licensed holder engineer on Type.
- (b) Initially the engineer was found hesitant and in-consistent while answering the question by the AAIT.
- (c) There was a lot of queries still remains un-answered by the maintenance manager. These will be accommodated in the ‘Final Report’.
- (d) There were a lot of queries on the engine which was installed on 18 August 2020 after overall and few only 459.45 hrs, AAIT feels that in-depth investigation is required on the maintenance of this engine after installation and should go in depth investigation on maintenance procedure etc.

Note: The AAIT will continue to conduct further in-depth investigation and will include extended information in the final report

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	<p>2. Company Quality assurance manager</p> <p>(a) The quality assurance manager started working from 05 January 2021.</p> <p>(b) He was on course module-10 at BATC from 07.02.21 till 14.03.2021.</p> <p>(c) When the accident took place, he was in Dhaka.</p> <p>(d) He didn't visit the maintenance facilities at Rajshahi since his joining.</p> <p>(e) Check 'I' was carried out at Rajshahi on 21.02.2021. The Check remained un-signed as the quality assurance person was in Dhaka.</p> <p>(f) The AAIT feels that an in-depth investigation of the quality assurance activity of the company is to be studied.</p> <p>Note: The AAIT will continue to conduct further in-depth investigation and will include extended information in the final report</p>
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3.2.2 Machine

3.2.2.1 Machine?	<p>(a) Engine failed with total loss of oil and with high temperature. As such requires in dept analysis and investigation to find out the present status of the engine and also reason of oil loss.</p> <p>Note: The in-depth investigation and analysis on aircraft and engine will be provided in the final report.</p>
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3.2.3 Environment

3.2.3.1 Environment?	Not contributory with this accident
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3.2.4 Organizational & Motivation aspect:

3.2.4.1 Organizational Aspect?	<p>(a) The AAIT has found some organizational lapses, like:</p> <ol style="list-style-type: none"> 1. No proper, separate store in the maintenance facilities. 2. No proper fuel shade kept in the open sky. 3. Proper maintenance procedure is absent. 4. Shortage of ground support equipment at Rajshahi maintenance facility. <p>Note: The in-depth investigation and analysis on Organizational aspects will be provided in the final report.</p>
3.2.4.2 Motivation aspect	<p>(a) While discussing with the employee, it was felt that they are not motivated to work for the organization.</p> <p>Note: In-depth analysis is required and will be added in the final report.</p>

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3.3 CONCLUSIONS

Will be added in Final Report.

3.3.1 FINDINGS

3.3.1.1 Findings?	Will be added in the final report
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3.3.2 Causes

3.3.2.1 Causes?	<p>(a) At this stage of preliminary investigation, the AAIT presumes that the cause of the accident could be due to the starvation of engine oil which resulted the engine to fail. The AAIT, while continuing with further investigation, would hopefully determine the probable cause of the oil starvation, as it expects to quest for the following queries:</p> <ol style="list-style-type: none"> 1. The cause for the oil to drain out, if so, why? 2. Was there any external rupture of the hoses or internal leakage within the engine? 3. Was there any willful or unwilful maintenance negligence that could contribute to the oil starvation? <p>(b) The AAIT is in contact with engine manufacturer through accredited representative of NTSB to find out the answers to these questions through joint investigation and analysis.</p> <p>Note: The in-depth investigation and analysis report will be added in the final report.</p>
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3.3.3 Contributing Factors

3.3.3.1 Contributing Factors?	Note: The 'Contributing Factors' of the accident will be provided in the 'Final Report' after in-depth investigation.
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3.4 SAFETY RECOMMENDATIONS

3.4.1 Intermediary Safety Recommendations

3.4.1.1 Intermediary Safety Recommendations?	Note: The 'Intermediary Safety Recommendations' of the accident will be provided as and when emerge during the remaining part of the investigation. The AAIC-BD will do the needful, as applicable, and will also include them in the 'Final Report'.
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3.4.2 Safety Recommendations

3.4.2.1 Safety Recommendations?	Will be provided in the final report.
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4. APPENDICES

4.1 All evidences, documents, photographs etc., will be preserved in 'File'

END

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