DIRECTORATE GENERAL OF CIVIL AVIATION

FINAL INVESTIGATION REPORT ON LEFT HAND WING SHARKLET DAMAGE INCIDENT TO M/s AIR ASIA A320 AIRCRAFT VT-ATB AT BAGDOGRA AIRPORT ON 15.02.2019

GOVERNMENT OF INDIA, O/o DIRECTOR GENERAL OF CIVIL AVIATION, OPP. SAFDARJUNG AIRPORT, NEW DELHI-110003

FINAL INVESTIGATION REPORT ON INCIDENT TO M/s AIR ASIA A320 AIRCRAFT VT-ATB AT BAGDOGRA AIRPORT ON 15.02.2019

1	Aircraft	Type	Airbus 320
		Nationality	Indian
		Registration	VT-ATB
2	Owner		M/s Wilmington Trust SP Services (Dublin) Limited
	Operator		M/s Air Asia (India) Limited
3	Pilot – in –Command		Airline Transport Pilot License
	Extent of injuries		Nil
4	Date & Time of Incident		15.02.2019 & 1340hrs IST Approx
5	Place of Incident		Bagdogra Airport
6	Co-ordinates of Incident site		Latitude 26° 40' 52" N Longitude 88° 19' 43" E
7	Last point of Departure		Bagdogra Airport
8	Intended place of landing		Kempegowda International Airport, Bengaluru
9	No. of Passengers on board		148
10	Type of Operation		Scheduled
11	Phase of Operation		Taxi
12	Type of Incident		G-COL (Aircraft LH wing sharklet hit the Blast Pen wall during backtracking at runway from non-designated area)

(All timings in the report are in IST or else specifically mentioned)

SYNOPSIS:

On 15.02.2019 M/s Air Asia (India) Limited A320 aircraft VT-ATB was scheduled to operate flight I5-2392/2393 (Bengaluru-Bagdogra-Bengaluru). Aircraft was under the command of appropriately licence holder crew on type. Aircraft took off at 1033 hrs IST from Bengaluru and landed safely at Bagdogra at 1251 hrs IST. At Bagdogra bay No. 4 was allocated to aircraft VT-ATB.

After aircraft chocks off at 1334hrs IST it started taxi through taxiway 'B' which is on the civil dispersal side, entered runway for taxi to runway end as Bagdogra airport is not having a separate taxiway which leads the aircrafts to end of the runway. Aircraft was then supposed to backtrack on runway 36 dumbbell for lineup and takeoff, however crew initiated 180° turn from a non-designated area for lineup and takeoff before reaching the dumbbell. During negotiating 180° turn, the LH wing sharklet of the aircraft hit the blast pen wall surface. Crew heard some sound and also felt some jerk, however they did not realise that LH wing sharklet had hit the blast pen wall surface. Aircraft took off at around 1340hrs IST. Aircraft successfully completed the flight I5-2393 (Bagdogra- Bengaluru) without any abnormalities and landed Bengaluru at 1625hrs IST. The damage was observed by the engineering personnel after landing at Bengaluru airport. The damage was found beyond the limit hence the aircraft was declared on ground for replacement of LH wing sharklet.

Director General of Civil Aviation ordered the investigation of the incident by appointing Investigator-in-Charge vide order no. DGCA-15018(10)/5/2019-DAS dated 19.02.2019 under Rule 13(1) of The Aircraft (Investigation of Accidents and Incidents) Rules 2017. During investigation it was found that probable cause of the incident is attributed to:

Crew judgemental error in identifying non-designated place as dumbbell for carrying out 180° turn for lineup and takeoff.
Poor CRM between the flight crew was contributory factor to the incident.

1. FACTUAL INFORMATION:

1.1 History of Flight:

On 15.02.2019, M/s Air Asia (India) Limited A320 aircraft VT-ATB was scheduled to operate flight I5-2392/2393 (Bengaluru-Bagdogra-Bangalure). Aircraft was under the command of appropriately licence holder pilots on type. Bangalore-Bagdogra was the first sector for both the crew on 15.02.2019. Aircraft took off at 1033 hrs IST and landed safely at Bagdogra airport at 1251 hrs IST. Bay No. 4 was allocated to aircraft for parking.

Crew prepared the aircraft for return leg i.e Bagdogra- Bengaluru. ATC instructed VT-ATB crew for taxi through runway, backtrack and then takeoff from runway 18, Bagdogra. Engine # 1 was started at bay No. 4 itself. Crew got clearance for taxi via taxiway 'B', enter runway, vacate runway via taxiway 'D' and again enter runway via taxiway 'C' for takeoff from runway

18. Crew entered taxiway 'B', however there was delay for takeoff from runway 18 as one of the aircraft was on approach on runway 18.

As per crew statement, they changed the plan and First Officer requested the takeoff clearance from runway 36. ATC agreed on the request and advised VT-ATB crew to enter runway, taxi on runway and backtrack on runway for lineup and take off from runway 36. Engine # 2 was started at Taxiway 'B' and aircraft then entered runway. Crew did not take much time for preparing the aircraft due to change plan for takeoff from runway 36. Aircraft entered the runway for taxi to runway end as Bagdogra airport is not having a separate taxiway which leads the aircrafts to end of the runway. As per the procedures of Air Asia (India) Limited, PIC was taxiing the aircraft after clearance from ATC. During the aircraft taxi, First Officer was engaged in checklist completion (Flight controls check, ATC clearance and before takeoff checklist etc). While on process of taxiing through runway Pilot-in-Command initiated 180°turn on runway well before the designated area i.e dumbbell. During the process of negotiating 180° turn, the LH wing sharklet hit the blast pen wall and LH wing sharklet got damaged. As per the crew, both of them felt some sound/ jerk however couldn't ascertain the exact reason for the same. Crew presumed that sound/jerk could have been as a result of nose wheel running over on uneven surface on runway.

Aircraft completed 180° turn and PIC handed over the controls to First Officer for takeoff from runway 36. It is pertinent here to mention that this was the first takeoff for both the crew from runway 36 of Bagdogra airport. First Officer put the thrust lever on FLEX position for takeoff. After attaining the ground speed of 101kts, Pilot-in-Command advanced the thrust lever to TOGA position. Aircraft took off from Bagdogra and proceeded to destination.

PIC mentioned that thrust lever was advanced from FLEX to TOGA position during takeoff roll as they had experienced tail wind while previous landing.

Cabin crew during the course of investigation had submitted that after takeoff and during climb, passenger seated at seat No. 31 A informed one of the cabin crew that aircraft wing had hit the wall before takeoff. Same was also informed by passenger seated at 28A, 28B, and 28C to the cabin crew.

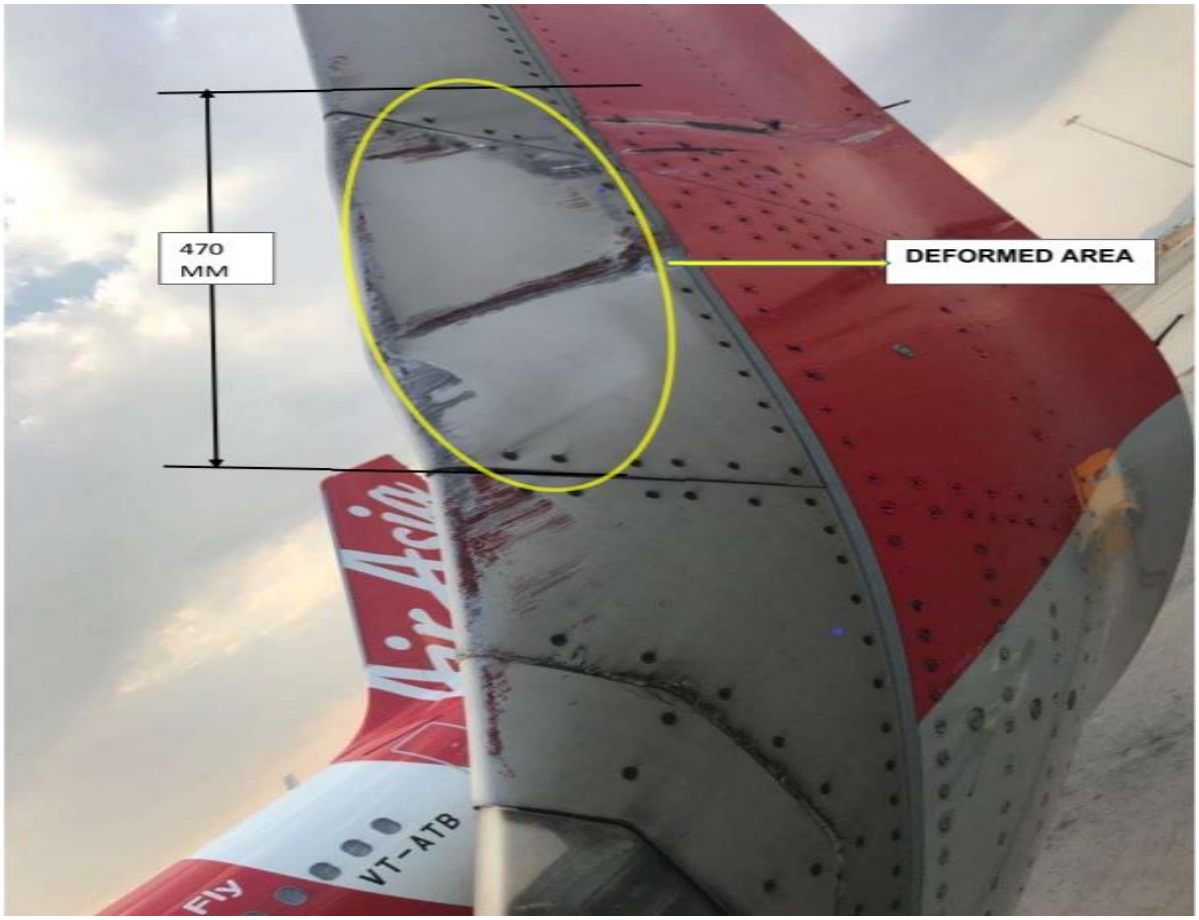
R1, R2 and L1 checked the wing from cabin, however no damage was observed by the cabin crew. One of the cabin crew informed the same to cockpit crew at 1420hrs IST. Cockpit crew also checked the LH wing from cockpit, however they could not notice any damage because the damage was sustained by outboard surface of LH wing sharklet. No abnormality was noticed by the crew during the flight nor were any flight parameters abnormal.

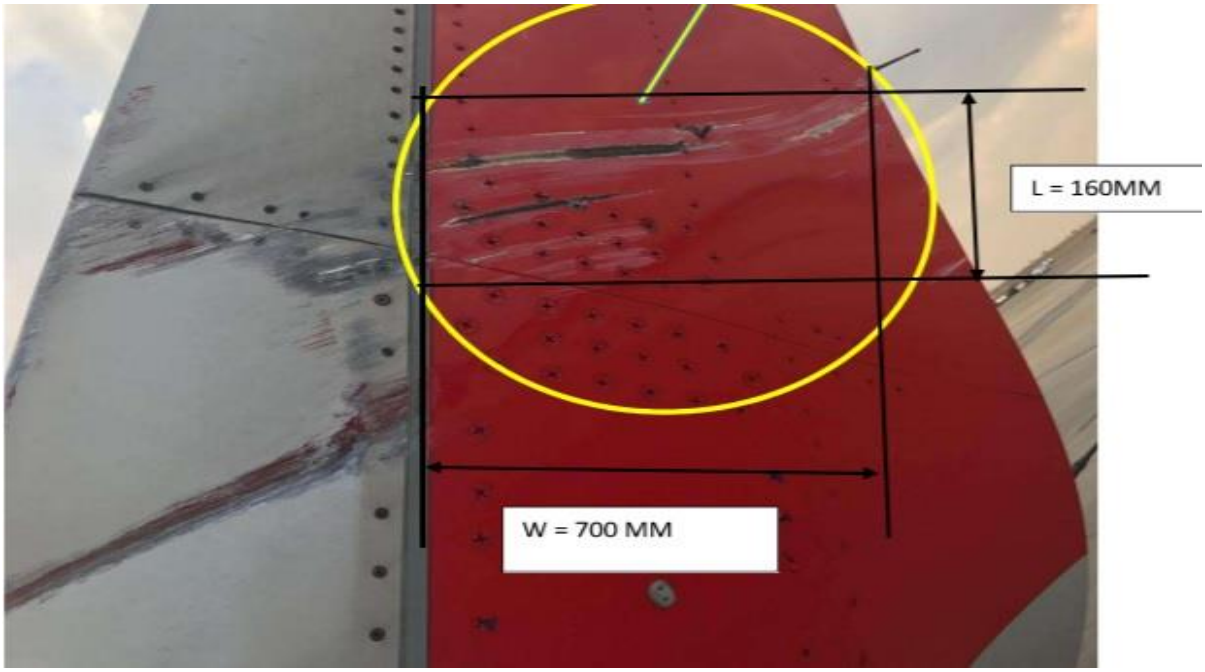
Aircraft continued the flight and landed Bengaluru airport safely at 1625hrs IST. After landing Pilot-in-Command checked the nose wheel for any abnormalities. Engineering personal during post flight inspection observed the damage on LH wing sharklet and found the damage beyond the operating limit. Aircraft was grounded at Bengaluru for maintenance work on 15.02.2019 and released for operation on 20.02.2019 after changing the LH wing sharklet.

1.2 Injuries to Persons :

Injuries	Crew	Passengers	Others
Fatal	NIL	NIL	NIL
Serious	NIL	NIL	NIL
Minor/None	2+4	148	

1.3 Damage to Aircraft: Aircraft received minor damage to LH wing Sharklet.





1.4 Other Damages: Blast pen wall surface at Bagdogra airport adjacent to runway 18/36 received minor damage.

1.5 Personnel Information:

1.5.1 Pilot-in-Command:

Age	36 yrs 9 months, Female
License	Aircraft Transport Pilot License
Date of Issue	14/10/2015
Valid upto	13/10/2020
Category	Aeroplane
Date of Class I med exam	11/09/2018
Class I Medical Validity	17/09/2019
Date of Issue of FRTOL License	19/01/2016
IR rating	14/04/2019
FRTOL license valid upto	18/01/2021
Total Flying experience	5634:01 h
Total Flying experience (exp on type)	4100 (PIC 2115: 27 h & CO PILOT 1985 h)
Total Flying experience last six months	392:23 h
Total Flying experience last 30 days	83:15 h
Total Flying experience last seven days	10:29 h
Total Flying experience last 24 hrs	04:55 h
Rest before the flight	18:00 h

1.5.2 First Officer:

Age	25 yrs, Male
License	CPL
Date of Issue	30/06/2017

Valid upto	29/06/2022
Category	Aeroplane
Date of Class I med exam	05/03/2019
Class I Medical Validity	07/03/2020
Date of Issue of FRTOL License	25/04/2017
IR rating	16/10/2018
FRTOL license valid upto	24/04/2022
Total Flying experience	587:54 h
Total Flying experience (exp on type)	350:40 h
Total Flying experience last six months	350:40 h
Total Flying experience last 30 days	50:48 h
Total Flying experience last seven days	09:31 h
Total Flying experience last 24 hrs	05:33 h
Rest before the flight	22:55 h

Both the crew had undergone pre-flight medical check as per the provision contained in CAR Section-5, Series-F, Part-III before first flight at Bangalore and were not found under the influence of alcohol.

1.6 Aircraft Information:

VT-ATB is Airbus 320-216 type of aircraft and is manufactured by Airbus Industries, Toulouse, France. The aircraft is bearing a serial No. 6034. Aircraft Certificate of Airworthiness is 6624 and valid upto 23.06.2026. Aircraft Certificate of Registration is 4514/3. Aircraft Review Certificate was issued on 31.08.2018 and valid upto 30.08.2019.

Aircraft maximum takeoff weight as per the weight schedule is 73500KG. Aircraft is fitted with CFM56-5B type of engine. LH Engine serial No. is 569178 and total engine hours/ CSN for LH engine is 18582/12395. RH Engine serial No is 569179 and total engine hours/ CSN for RH engine is 18582/12395.

Aircraft is fitted with tricyclic type of landing gears. There was no pending snag on the day of incident.

All the ADs, SBs and Modification were complied as on the date of incident on VT-ATB. Last E check was carried out on 08.12.2018 on VT-ATB. On the day of incident there was nil snag and defect pending prior to operating aircraft for the first flight.

The damaged LH wing sharkelet was bearing serial No. KAA10409 and was pre-fitted with aircraft at the time of delivery and confirmed from Aircraft Inspection Report VT-ATB. The damaged sharklet was removed from the aircraft as damage was beyond the permissible limit. The damaged sharklet was replaced with serviceable sharklet.

1.7 Meteorological Information:

The incident occurred during day time at 1340 Hrs IST. The METAR during the time of incident is as under:

At Time 1330 hrs IST:

27003KT 4000HZ SCT025 FEW030TCU BKN 100 24/15 Q1014 TEMPO RAIN.

The weather was not a contributory factor to the incident.

1.8 Aids to Navigation:

The Bagdogra airport is equipped with ILS for R/W 36, VOR, NDB and DME. During the investigation crew did not report any abnormality with regard to Aids to Navigation.

1.9 Communication:

The CVR recording was not available, as the incident part got erased in CVR recording due to long flight time from Bagdogra to Bengaluru.

During the taxi, 180^{o} turn and lineup process communication between crew and ATC was continuous as per ATC tape transcript.

1.10 Aerodrome Information:

Bagdogra Airport is Indian Air Force controlled airport with one runway i.e 18/36. The length of the runway 18/36 is 9000ft. R/W 36 is equipped with ILS. Bagdogra airport is equipped with CAT-7 firefighting services.

1.11 Flight Recorders :

CVR: The CVR recording of the incident part got erased due to long flight time from Bagdogra to Bengaluru (approx.-03 hours)

DFDR Analysis (DFDR timing mentioned is in UTC**):**

- At time 08:06:46
    - Aircraft entered the runway from taxiway ‘B’

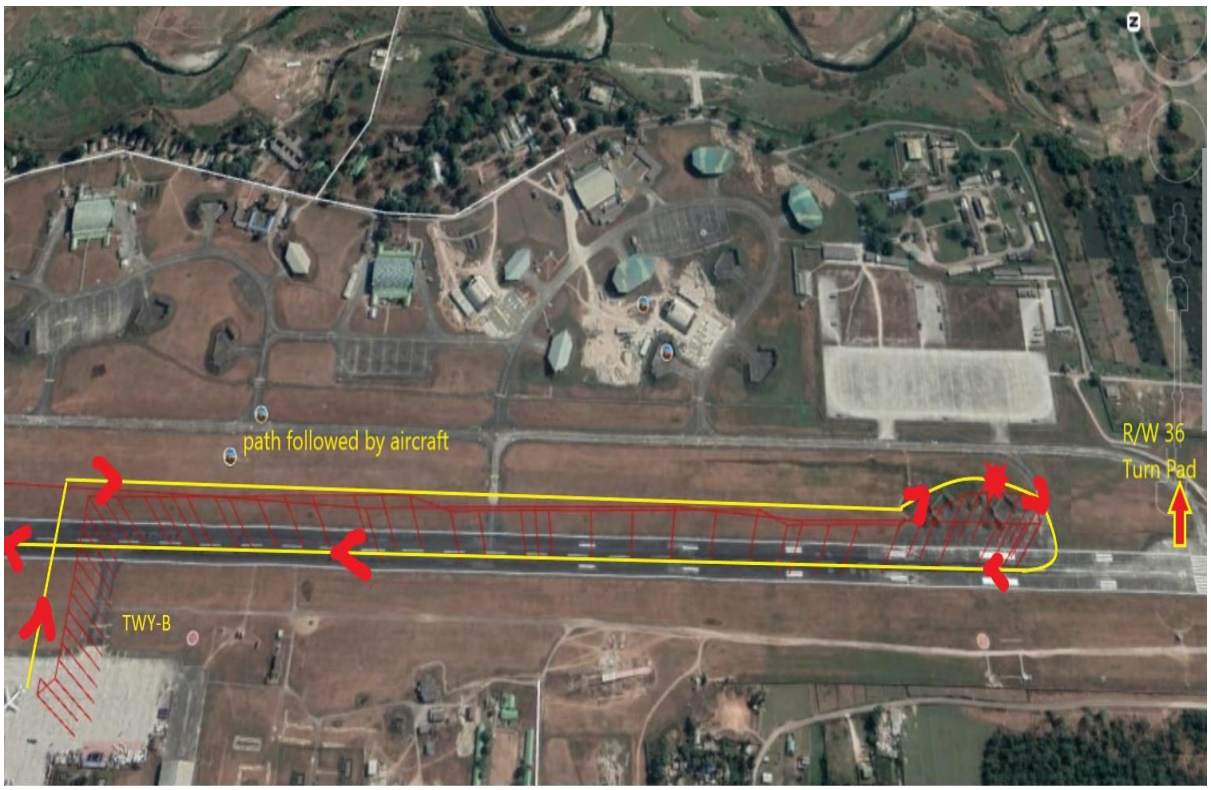
- PIC was in control for taxi to runway as per the policy of M/s Air Asia (India) Ltd.

- At time 08:08:15
  - Aircraft started 180° turn on runway for lineup.
- At time 08:09:15, aircraft completed 180° turn and was ready for takeoff.

- At 08:09:21
  - The thrust lever was moved to idle and then to flex at 08:09:22. Co-pilot was in controls for takeoff.
- After 19 seconds, when ground speed was 101kts, thrust lever was advanced to TOGA at 08:09:42.
- At 08:10:03 aircraft left the ground and took off.

The DFDR readout analysed in M/s Air Aisa (India) Ltd. FOQA monitoring tool i.e AirFACE and aircraft location coordinates were superimposed on Google Earth (AirFACE software is having a provision for doing so and a .kml file gets created to show the path followed by the aircraft) and found that, aircraft negotiated its 180° turn well before the runway 36 threshold point. While completing turn, aircraft LH wing sharket hit the blast pen wall and got damaged.

The path followed by the aircraft during taxi and lineup is as under:



1.12 Wreckage & Impact Information :

Aircraft LH wing sharklet hit the blast pen wall while aircraft was negotiating 180 degree turn for lineup and takeoff from non-designated place. The LH wing sharklet got damaged

and replaced by serviceable one after the incident. The blast pen wall on side of the runway got damaged. Deformation and scratches were observed on the shraklet and damage dimensions are given in para 1.3.

1.13 Medical & Pathological Information:

The incident was survivable and no one injured during the incident. Both the crew underwent pre-flight medical examination to check the consumption of alcohol and found not under the influence of alcohol.

1.14 Fire:

There was no pre and post impact fire during the incident.

1.15 Survival Aspects:

Incident was survivable in nature.

1.16 Test and Research: Nil

1.17 Organizational & Management Information:

M/s Air Asia (India) Ltd is a scheduled airline operating with valid Air Operating Permit issued by the DGCA, India. The company is operating Airbus A320 fleet of aircraft and at present M/s Air Asia (India) Limited is having 20, A320 aircraft in their fleet.

1.18 Additional Information: Nil

1.19 Useful and Effective Techniques: Nil

2. ANALYSIS:

Operation Aspect:

Crew were appropriately qualified on the type of aircraft. Crew took the weather from ATC before takeoff and weather obtained by crew was conducive for flight. During the flight Bagdogra- Bengaluru ATC instructed the aircraft VT-ATB to takeoff from runway 18. However there was delay for takeoff from runway 18 as one of the aircraft was on approach on runway

18. Crew then changed the plan and requested the revised takeoff clearance from runway 36. ATC agreed on takeoff from runway 36 and aircraft started taxi from taxiway 'B'.

Crew seems to be in hurry for takeoff from Bagdogra as they did not consider waiting for arriving aircraft to land. Rather they changed the plan to takeoff from runway 36, which was first takeoff from that end for both the crew. Further crew took less time for self-briefing and preparing the aircraft for takeoff from runway 36 due to changed plan.

Aircraft entered the runway for taxi to runway end as Bagdogra airport is not having a separate taxiway which leads the aircrafts to end of the runway 36. While on process of taxiing through runway Pilot-in-Command initiated the 180° on runway very well before the designated area i.e dumbbell. During the process of negotiating 180° turn, the LH wing sharklet hit the blast pen wall and LH wing sharklet got damaged. Crew presumed that sound/jerk could have been as a result of nose wheel running over uneven surface on runway.

During the process of taxi, 180° turn and lineup, Co-pilot was busy in head down duty to perform the various checklist and did not realise that PIC had made 180° turn from non-designated area resulting into left hand wing sharklet damage. There was lack of CRM between both the crew during taxi, 180° turn and lineup for takeoff.

After lineup PIC handed over the controls to First Officer for takeoff. First officer took over the control and advanced the thrust lever to FLEX position for takeoff. After attaining the ground speed of 101kts Pilot-in-Command advanced the thrust lever to TOGA position. Aircraft took off from Bagdogra and proceeded to destination.

PIC mentioned that thrust lever was advanced from FLEX to TOGA position during takeoff roll as they had experienced tail wind while previous landing. The submission of PIC was not accepted during investigation as weather during the departure from Bagdogra was fine for takeoff and not a contributory factor to the incident.

Engineering Aspect:

The aircraft was having a valid Certificate of Registration (C of R) at the time of incident. It was holding a valid Indian Certificate of Airworthiness (C of A) Airworthiness Review Certificate (ARC) was valid at the time of incident. There was no snag reported by the pilot before the flight.

All concerned Airworthiness Directives, mandatory Service Bulletins, and DGCA Mandatory Modifications were complied with as on date of incident.

3. CONCLUSION:

3.1 Findings:

3.1.1 Aircraft VT-ATB was having valid C of A and valid ARC.

3.1.2 Crew License were valid on the day of incident.

3.1.3 Initially crew planned the takeoff from Runway 18 (Bagdogra), however due to delay in departure from runway 18, crew took ATC clearance for takeoff from runway 36.

3.1.4 Crew seems to be in hurry for takeoff from Bagdogra as they did not consider waiting for arriving aircraft to land. Rather they changed the plan to takeoff from runway 36, which was first takeoff from that end for both the crew.

3.1.5 Crew took less time for self-briefing and preparing the aircraft for takeoff from runway 36 due to changed plan.

3.1.6 PIC without realising initiated 180° turn from non-designated area well before runway 36 dumbbell and during the process of completing 180° turn aircraft LH wing sharklet hit the blast pen wall surface and received damage.

3.1.7 Crew felt some jerk however they didn't realised that they have initiated 180° turn from non-designated area and LH wing sharklet hit the blast pen wall surface.

3.1.8 First Officer during the process of completing 180° turn was busy completing before takeoff checklist and failed to notice the mistake made by PIC.

3.1.9 After lineup, PIC handed over the controls to First Officer for takeoff and First Officer initiated the takoff roll by advancing the thrust lever to Flex Position.

3.1.10 Thrust levers were further advanced to TOGA position by PIC after reaching 101kts ground speed.

3.1.11 The weather was not a contributory factor to the incident.

3.2 Probable Cause of Incident:

Crew judgemental error in identifying non-designated place as dumbbell for carrying out 180° turn for lineup and takeoff.

Poor CRM between the flight crew was contributory factor to the incident.

4. SAFETY RECOMMENDATIONS:

4.1 Action as deemed fit may be taken by DGCA based on findings and cause.

(Shashi Paul)
Assistant Director Air Safety & IIC, VT-ATB
Dated 26.08.2020