

FINAL REPORT ON INCIDENT TO M/S FALCON AVIATION ACADEMY
CESSANA -152 AIRCRAFT VT-PTB AT FAIZABAD ON 04.03.2015

- | | |
|------------------------------|---|
| 1. Aircraft Type | : CESSNA 152 |
| Nationality | : INDIAN |
| Registration | : VT - PTB |
| 2. Owner | : FALCON AVIATION ACADEMY |
| 3. Operator | : FALCON AVIATION ACADEMY |
| 4. Commander – in –Command | : Student Pilot |
| Extent of injuries | : Nil |
| 5. First Officer | : N/A |
| Extent of injuries | : N/A |
| 6. Place of Incident | : Faizabad Airstrip |
| 7. Date & Time of Incident | : 04 th March 2015 13:50Hrs. IST (approx.) |
| 8. Last point of Departure | : Faizabad Airstrip |
| 9. Point of intended landing | : Faizabad Airstrip |
| 10. Type of operation | : Training flight |
| 11. Passengers on Board | : Nil |
| Extent of injuries | : Nil |
| 12. Phase of operation | : Landing |
| 13. Type of incident | : Abnormal Runway Contact |

(All the timings are in IST)

SUMMARY

On 04.03.2015, M/s Falcon Aviation Academy Cessna 152 aircraft VT-PTB was involved in a hard landing incident. The aircraft was engaged in a solo circuit and landing exercise at Faizabad Airstrip U.P by a trainee pilot. During landing, the aircraft bounced resulting in damage to the nose landing gear and propeller blades. There was no injury to the trainee pilot. There was no fire.

The incident was reported by M/s Falcon Aviation Academy to DGCA. DGCA instituted an Inquiry under rule 13 (1) of Aircraft (Investigation of Accidents and Incidents), Rules 2012 to investigate into the cause of the incident.

1. FACTUAL INFORMATION

1.1 History of the flight

On 04.03.2015, Cessna 152 aircraft VT-PTB of M/s Falcon Aviation Academy, Faizabad, U.P was involved in an incident of hard landing. The aircraft was under the command of trainee pilot. The flight was authorized by Chief Flight Instructor to carryout solo circuit and landing exercise. Total 05 sorties were planned for the day. M/s Falcon Aviation Academy has their local ATC at the Faizabad airport. On the day of the incident, ATC controller was not present. As per CFI, at the time of incident he was standing at around 2000 ft from the runway 30 threshold point and was giving instructions to pilot of the training flight on VHF set. This was the first flight of the day for the trainee pilot as well as for the aircraft. The aircraft took off from Rwy 30 at 13:35 hrs. IST into the wind.

During landing, at flare, the trainee pilot felt a sudden sink in the aircraft. The aircraft bounced on the main landing gear. The trainee pilot tried to control the aircraft by pulling the nose but she could not control the aircraft and the aircraft again sank and bounced on the main landing gear for the second time. It finally landed on the nose gear during the third impact. Post impact, the trainee pilot cut the mixture ignition 'off' and selected master switch 'off'. The aircraft finally stopped on the runway at approx. 418 feet from threshold of runway 30. The approach was little high as per the student pilot and at a little higher power setting. As per the statement of the student pilot, the approach speed was 65-67 knots at 30 degree flap setting. The speed limits for normal approach for Cessna 152 aircraft is 55-65 KIAS at flap 30 setting as per Pilot Operating Handbook.

The CFI immediately rushed to the spot along with the driver of the Crash tender. The trainee pilot was inside the cockpit till the CFI advised her to de-board. There were no injuries to the trainee pilot.

Due to the impact, the nose gear sheared off from the fork attachment fitting. As per CFI, fuel was found dripping from the left side of the wing fuel tank vent on the runway.

As per the statement of eyewitness (crash tender driver), the aircraft bounced and subsequently it landed on the nose-wheel. As per CFI who was supervising the flight, the second bounce appeared to be with a higher impact than the first one.

On examination of the wreckage and runway at the site, the aircraft was found to be lying on its nose. Traces of fuel spillage were found on the runway under the left wing.

The incident occurred during the day time at approx. 1350 HRS IST. The weather at the time of the incident was reported to be fine. The winds were reported to be 06 knots head wind.





1.2 Injuries to persons

INJURIES	CREW	PASSENGERS	OTHERS
FATAL	Nil	Nil	Nil
SERIOUS	Nil	Nil	Nil
MINOR	Nil	Nil	Nil
NIL	01	Nil	Nil

1.3 Damage to Aircraft:

Damage details – Aircraft was slightly damaged and damage details are as under:

- i. Both the Propeller blades found bent inwards.
- ii. Nose oleo strut was found broken from the fork attachment fitting
- iii. Shimmy dampener found detached from the nose gear fitting
- iv. Both steering rods (LH & RH) found bent
- v. Engine mount found broken

- vi. Main landing gear fuselage fairings found cracked
- vii. Exhaust stack found damaged at the lower end

1.4 Other damage: There was some damage to the runway surface by the nose oleo and propeller.

1.5 Personnel information

1.5.1 Pilot – in – Command / Student Pilot

Trainee pilot : Female, Age: 21 years

License : SPL
Valid till 28.04.2016

Date of Med. Exam. : Class 2 Medical Assessment done on 17/11/2014

Med. Exam valid upto : 16/11/2016

FRTO License : Valid till 09/06/2021

Total flying experience (including incident flight) : 50:30 hours

Experience on type (including incident flight): Dual-32:50 Hrs, Solo-17:40 Hrs.

Total flying experience during last 90 days : 21:55 hours

Total flying experience during last 30 days : 13:50 hours

Total flying experience during last 07 Days : 01:00 hours

Total flying experience during last 24 Hours : 01:00 hours

Rest before flight : 20 Hrs.

Student pilot started her flying in the year 2011 at M/s Chetak Aviation, Aligarh, UP. Total flying hours done at M/s Chetak Aviation, Aligarh, UP by the student pilot was 28:20 Hrs out of which 23:25 Hrs was dual flying and 04:55 Hrs solo flying. Her first solo sortie was

done on 13.10.2011 at 20:20 Hrs. She started her training flying at M/s Falcon Aviation Academy, Faizabad in Dec 2014.

1.5.2 AME

The concerned AME was holding AME license which was valid upto 29.10.2015.

1.6 Aircraft information

Manufacturer	:	Cessna Aircraft Company
Year of manufacturing	:	1981
Validity of C of A	:	20.06.2015
Validity of ARC	:	19.06.2015
Type of engines	:	Piston Engine (Lycoming O-235-L2C)
No. of engines	:	Single engine
Type of propeller	:	Fixed pitch (Sensenich 72CK56-0-54)
Time since New (Aircraft)	:	7603:49Hrs
Time since New (Engine)	:	33:25Hrs

The aircraft had flown 7603:49Hrs prior to the day of incident. Total hours since last overhaul of the engine were 33:20 Hrs. The last scheduled maintenance carried out on the aircraft was 200 hrs / 01 year inspection schedule which was carried out on 28.12.2014 at 7602: 54 airframe hours. Thereafter aircraft had flown 55 minutes.

No snag was reported during last 15 days prior to the day of the incident.

1.7 Meteorological information:

There is no Met facility available at Faizabad airfield. Weather was reported to be fine by the student pilot. As per student pilot, winds were head wind and sky was clear. She had checked weather report of Lucknow & Varanasi from IMD website. Wind sock is available at the airstrip

The flying club maintains Daily Meteorological Record on hourly basis for Faizabad / Lucknow / Rae Bareilly / Gorakhpur / Varanasi

1.8 Aids to navigation: GPS (Garmin Aero 500)

1.9 Communications: M/s Falcon Aviation Academy have their local ATC at the airport. VHF RT set is available in tower and handheld sets are available on ground and used on 123.45 MHz frequency.

On the day of the incident, ATC controller was not present. CFI was standing at about 2000 ft. from the runway 30 threshold point and was giving instructions to the trainee pilot on VHF set.

1.10 Aerodrome information

Faizabad Airstrip is in Uttar Pradesh, India

Co-ordinates : N 26° 45'04" and E 082° 09' 18"
Elevation : 327 Ft

Runway Orientation and dimension: Rwy 30/12– 1500x30 metres

1.11 Flight recorders: N/A

1.12 Wreckage and impact information:

At 270 feet from the runway threshold and 16 feet LH of the runway centerline nose tyre marks (4 feet and 7 inches in length) were found. Propeller marks were also found on the

LH side of the runway initially at six places 16 feet away from the centerline. The prop marks were found at a distance of 277 feet, 280 feet, 281 feet 10 inches, 284 feet, 287 feet, 294 feet respectively from the runway threshold. At a distance of 316 feet away from threshold and 17 feet LH of the runway centerline deep scratch marks (17 feet length long) were visible on the runway which appeared to be from the broken oleo. Propeller marks were again seen on the runway along the scratch marks at 321 feet and 327 feet away from threshold. Small part of the fork fitting along with broken attachment bolt was also found lying at 331 feet from the threshold and 19 feet away from the centerline. Nose wheel was found detached from the fork attachment fitting and was lying at a distance of 25 feet diagonally from the nose of the aircraft in the aircraft final rest position (approx. 20 feet horizontally away from the main wheels of the aircraft and approx. 15 feet vertically away from the nose of the aircraft and 403 feet from the threshold).

1.13 Medical and pathological Information: N/A

1.14 Fire

There was no fire.

1.15 Survival aspects

The incident was survivable.

1.16 Tests and research:

The failed / damaged parts of the nose wheel assembly were examined in AED, DGCA Hqrs. Upon examination, tube axle was found loose (running) with the bearings. Condition of the bearings was found to be satisfactory. There was an indication of undersize tube axle. Scoring, scratch marking and pitting were noticed on the tube axle. Deep groove markings on both the ferrules were found which confirmed that the grooves occurred from the outer circumference of the washers due to the horizontal movement of the tube axle during earlier landings. Presence of paint marks in the groove of ferrule confirms that these grooves existed

before the incident and could have been easily detected by naked eyes while painting the ferrule.

For further confirmation, the following information was obtained from the manufacturer:

1. Outer diameter of the tube axle - 1.250 inches with a tolerance of +000 and -.002
2. The bore diameter of the bearing – 1.250 inches
3. The fit between the tube axle and bearing should be tight slip fit
4. Total length of the axle tube is 5.500 inches, including the end of chamfer.

On actual measurement of the outer diameter of the tube axle of the failed nose wheel, it was found that the tube axle was undersize beyond the specified tolerance limits.

1.17 Organizational and management information

M/s Falcon Aviation Academy is based in Faizabad, U.P. It was established in year 2009. It has a fleet of Cessna 152 aircrafts and Piper Seneca PA34-200 aircrafts.

1.19 Useful or effective investigation techniques: Nil

2. ANALYSIS

2.1 Serviceability of the aircraft:

The aircraft before the incident was fully serviceable and there was no defect pending for rectification. No snag was reported during last 15 days prior to the day of the incident.

During the investigation of the failed nose wheel at DGCA HQ, indication of poor maintenance in the nose wheel area was observed. The tube axle was found to be undersized beyond manufacturer specified limits.

The loose tube axle inside the bearing led to the breaking of the nose gear on impact.

2.2 Weather:

Weather was not a contributory factor in this incident. However, as per student pilot, a sudden sink was felt before touchdown.

2.3 Pilot handling of the aircraft:

The trainee pilot was doing solo circuit and landing exercise. Total 05 sorties were planned for the day. This was the first flight of the day for the trainee pilot. The aircraft took off from Rwy 30 at 13:35 hrs. IST.

During landing, at flare height, the trainee pilot felt a sudden sink in the aircraft. The aircraft bounced on the main landing gear. The trainee pilot tried to control the aircraft by pulling the nose but she could not control the aircraft and the aircraft again sank and bounced on the main landing gear for the second time. It finally landed on the nose gear during the third impact. Post impact, the trainee pilot had cut the mixture ignition 'off' and master switch 'off'. The aircraft finally stopped on the runway at approx. 418 feet from threshold of runway 30. As per the statement of the student pilot, the approach was little high, at a little higher power setting. The approach speed was approximately 65-67 knots at 30 degree flap setting which was more than 55-65 KIAS as per POH. The corrective training for the same was imparted to the trainee pilot.

The trainee pilot was inside the cockpit till the CFI advised her to de-board which could have been dangerous if there was a post impact fire.

The pilot handling is considered as a factor to the incident.

3. CONCLUSIONS

3.1 Findings

1. The trainee pilot was doing solo circuit and landing exercise and this was her first flight of the day.
2. Weather was reported to be fine and winds were 06 knots head wind.
3. On the day of the incident, ATC controller was not present in the tower. CFI was standing at around 2000 ft from the runway 30 threshold point and was giving instructions for the control of the training flight on handset.
4. During landing, at flare height, the trainee pilot felt a sudden sink in the aircraft.

5. The approach was little high, at a little higher power setting. The approach speed at 30 degree flap setting was 65-67 knots and was higher than the limits laid down in POH. After the incident trainee pilot had undergone necessary corrective trainings.
6. The trainee pilot was inside the cockpit till after the incident which could have been dangerous if there was a post impact fire.
7. Upon laboratory examination, the nose wheel tube axle was found loose with the bearings. Deep groove markings on both the ferrules with paint marks in the groove of ferrule were found.


3.2 Probable cause of the Incident:

Student pilot improper flare during landing made the aircraft bounce and her improper bounce recovery technique to recover from the bounced landing resulted into the incident.

The loose tube axle inside the bearing led to the breaking of the nose gear on impact.

4. SAFETY RECOMMENDATIONS:

- a. Instructions to be issued by the flying club for all the trainee pilots to come out of the aircraft immediately after incident.
- b. A onetime inspection to measure the dimensions of axle tube and of the bearing of the nose wheel of the entire fleet of the flying club.


(Kavita Singh) 11/01/2019
Inquiry Officer