



FINAL REPORT

Incident involving a hard landing of the Cessna 152 aircraft operated by Asian Aviation Center, bearing registration 4R-ACV, at Colombo International Airport, Ratmalana, Sri Lanka on 08th June 2024.

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Table of Content

List of Acronyms & Abbreviations	2
1. Synopsis	3
Objective	3
2. Factual Information	3
2.1 History of Flight	4
2.2 Injuries to Persons:	4
2.3 Damage to Aircraft:	4
2.4 Personnel Information:	9
2.5 Aircraft Information	9
2.6 Meteorological Information:	9
2.7 Aids to Navigation:.....	9
2.8 Communication:	10
2.9 Flight Recorders:	10
2.10 Wreckage and impact information:	10
2.11 Organizational and Management Information.....	10
2.11.1 The Air Operator	10
3. Analysis	10
3.1 Analysis of Aircraft Documents:	10
3.2 Further Analysis of The Documentary Evidence	10
3.3 Aircraft Maintenance	11
3.4 Flight Operation	11
3.5 Safety Reporting Culture	12
4. Conclusion	12
4.1 Findings	12
4.2 Probable cause(s):.....	13



List of Acronyms & Abbreviations

ATC	-	Air Traffic Control
CAASL	-	Civil Aviation Authority of Sri Lanka
DGCA	-	Director General of Civil Aviation
FI	-	Flight Instructor
Ft	-	feet
hrs	-	hours
MET	-	Meteorological / meteorology
MOR	-	Mandatory Occurrence Report
MSN	-	Manufacturer Serial Number
PIC	-	Pilot in Command
AAC	-	Asian Aviation Center (Pvt) Limited
UTC	-	Coordinated Universal Time
VCCC	-	Colombo International Airport – Ratmalana, Sri Lanka



Incident involving a hard landing of the Cessna 152 aircraft operated by Asian Aviation Center, bearing registration 4R-ACV, at Colombo International Airport, Ratmalana, Sri Lanka, on 08th June 2024

1. Synopsis

On June 8, 2024, a Cessna 152 aircraft, bearing registration 4R-ACV, operated by the Asian Aviation Center (an approved Training Organization), conducted a stage check at Colombo International Airport, Ratmalana with a student pilot and a Flight Instructor onboard. During the latter stage of the sortie, between approximately 13.40hrs to 14.300hrs (LT), the aircraft experienced a hard landing on Runway 22, Colombo International Airport, Ratmalana.

Following the flight, the instructor pilot recorded a Technical Log (Tec Log) entry noting a suspected hard landing by the student pilot.

The incident was officially reported to the Civil Aviation Authority of Sri Lanka (CAASL) by AAC's Quality Manager on June 10, 2024, via email. A Mandatory Occurrence Report (MOR) was subsequently received by this office.

After reviewing the MOR, the occurrence was categorized as an 'incident'. Accordingly, an investigation was initiated with the objective of identifying contributing factors and implementing preventive measures to avoid recurrence. The aircraft was under CAASL custody to facilitate a thorough examination before its release.

The Investigation Team visited AAC to gather evidence and assess the damage sustained by the aircraft. Statements were recorded from the relevant AAC personnel, including the instructor pilot and student pilot involved in the incident.

Objective

The objective of this investigation is to prevent the recurrence of similar incidents in future.

2. Factual Information

Operator	:	Asian Aviation Center (Pvt) Ltd, Colombo International Airport, Ratmalana, Sri Lanka
Registered Owner	:	Asian Aviation Center (Pvt) Ltd
Aircraft Make and Model	:	Cessna 152 (15281504)
Aircraft Nationality	:	Sri Lanka
Aircraft Registration	:	4R-ACV
Place of Incident	:	22 Runway at Colombo International Airport, Ratmalana
Date and Time	:	08 June 2024
Time	:	Approx. between 13.40hrs and 14.30hrs (LT)

Table 01: Factual Information

2.1 History of Flight

The Cessna 152 aircraft, bearing registration number 4R-ACV, belonging to AAC, was utilized for training flights on June 8, 2024. The aircraft commenced operations at 07:30 hrs (LT) and completed a total of eight sorties, accumulating 5 hours and 50 minutes of flight time and with 25 landings throughout the day.

Sortie No	Take off time	Landing time	Time (hrs)	No of Landings
1	07.30	08.20	0.50	4
2	08.20	08.45	0.25	1
3	08.55	09.30	0.35	3
4	09.30	10.10	0.40	1
5	10.20	11.10	0.50	5
6	11.30	12.20	0.50	5
7	12.35	13.25	0.50	5
8	13.40	14.30	0.50	1
Total			5.50	25

Table 02: Flying hrs of 4R-ACV on 8th June 2024

The final sortie of the day was a 50-minute stage check flight for a PPL student pilot, accompanied by a Flight Instructor (FI). During landing, the student experienced a minor bump. The FI subsequently recorded a tech log entry, noting that the student had bounced the aircraft.

2.2 Injuries to Persons: Nil

2.3 Damage to Aircraft: The aircraft sustained the following damages:

2.3.1 Engine Mount Frame.

The tubular bar on the left side of the lower engine mount was bent in the middle. This bend resulted from a compression force exerted due to the landing gear being forced to the right (when viewed from the cockpit).



Figure 01: Damages sustained to the Engine mount



Figure 02: Deformed Engine Mount

2.3.2 Nose Landing Gear Oleo Strut

The nose landing gear was abnormally bent backward, which was a result of the deformation in the tubular engine mount.



Figure 03: The effected Nose Landing Gear (bent backwards)

2.3.3 The Right-Side Torque Links and Attachments

This is the right-side torque link attachment of the steering system. The right-side torque link attachment of the nose steering system was found to be damaged following the incident.



Figure 04: Distorted Torque Link

2.3.4 All Four Engine Mount Attachments on The Firewall

Upon inspection, it was found that the bolt holes of the bulkhead were enlarged, and the bolts themselves were affected due to the excessive forces applied during the incident.



Figure 05: Right upper Engine Mount



Figure 06: Right Lower Mount

2.3.5 Damage to Nose Wheel Assembly

The white marks observed on the tire indicate that the left side wall of the tire had contacted the ground due to leftward force landing. The impact caused the tire to compress significantly, leading to the rim making contact with the ground. This impact has resulted in the removal of yellow color creep marks that existed prior to the flight. Therefore, the nose wheel assembly have experienced abnormal forces.



Figure 07: Impact Marks NLG

2.3.6 Rudder Functional Test - Unsatisfactory Result

The rudder functional test was not satisfactory, as the rudder pedals did not operate freely. This issue arose due to the excessive force applied to the steering linkage, which resulted in the lower rudder mounting bracket making contact with the aircraft's skin. This contact caused wrinkles in the skin, restricting the movement of the rudder. As a result, the rudder did not move as expected during the test.



Figure 08: Wrinkles at the Rudder mounting Area



Figure 09: Wrinkles at the Rudder mounting Area



2.4 Personnel Information:

Pilot-In-Command /Flight Instructor

Licence : CAASL-72-A-10405) issued by the DGCA Sri Lanka

Medical : Class 1 – valid till 21 December 2024

Age : 28 yrs, Male

Aircraft Ratings with issued dates:

- Cessna 150 series, 23 December 2016
- Instrument Rating, 23 December 2016
- Flight Instructor, 17 August 2020

Flying experience:

- Total : 2316.3 hrs
- Total P1 : 2129.3 hrs
- Total P1 on type : 2129.3 hrs
- Instructional : 2033.6 hrs

Student Pilot

Licence : SPL/A/3372 issued by the DGCA Sri Lanka

Medical : Class 1 – valid till 18 September 2024

Class II – valid till 18 September 2027

Age : 18 years, Male

Flying Experience : Total: 8.8 hrs

2.5 Aircraft Information

Type and Model : Cessna 152
Manufacturer's Serial No : 15281504
Certificate of Registration : No 241, Sri Lanka Civil Aircraft register
Certificate of Airworthiness : No 193 and valid till 24th October 2023
Total Airframe Hours : 17621.45 (As of 08th June 2024)
No. of Engines & Type : No: 01, Lycoming O-235-2LC
Weight and Balance : Within Limits

2.6 Meteorological Information: VFR Condition

2.7 Aids to Navigation: The flight was VFR.



2.8 Communication: VHF Communication with 119.100 with VCBI.

2.9 Flight Recorders: this aircraft did not fit with the recorders.

2.10 Wreckage and impact information: N/A

2.11 Organizational and Management Information

2.11.1 The Air Operator

Asian Aviation Center (Pvt) Ltd, based at Colombo International Airport, Ratmalana, is an approved Training Organization licensed by the Director General of Civil Aviation - Sri Lanka to provide flying training. AAC was launched in 1979 and currently operates two Cessna 152 aircraft. The Nominated Post Holders are as follows.

- Managing Director (Accountable Manager)
- Manager Maintenance
- Quality Manager

3. Analysis

3.1 Analysis of Aircraft Documents:

3.1.1 The aircraft had a valid certificate of airworthiness (Registry No 157) and a valid certificate of registration (registry number 200).

3.1.2 The aircraft was maintained by an approved AMO and CAMO.

3.1.3 The AMO and CAMO of the Training Organization had valid CAASL approvals.

3.1.4 The aircraft was airworthy when dispatched for the flight.

3.2 Further Analysis of The Documentary Evidence

As per the instructions of the DGCA, two Civil Aviation Inspectors (Flight Operations and Airworthiness), appointed as members of the team, visited the AAC on June 16, 2024. They inspected the preliminary damage to the aircraft and gathered initial documentary evidence.

Subsequently, the following personnel were called before the appointed investigation team, and their statements were recorded at CAASL on June 19 and 20, 2024, to determine the circumstances that led to the incident.

- Managing Director/Accountable Manager
- Acting Safety Manager
- Quality Manager
- Chief Flying Instructor (CAASL-72-A-10405)
- Student Pilot
- Maintenance Manager/ B2 Engineer (CAASL.66.253)
- Certified B 1.2 Engineer (CAASL.66.0563)
- Certified B 1.2 Engineer (CAASL.66.0563)
- Certified B 1.2 Engineer (CAASL AML414)
- Duty Air Traffic Controller
- Senior Technician
- Technician



3.3 Aircraft Maintenance

- 3.3.1** The last 100-hour service of the aircraft was conducted on May 26, 2024, and a CRS was issued. During the service, no faults were reported on the NLG. The daily service was performed by certifying staff, and the CRS was issued. According to their statement, there were no abnormalities before the flight, and the NLG extension was normal. However, it was later found by the team that there was no air pressure in the NLG olio leg, whereas the air pressure should have been 30 psi. Therefore, it can be concluded that the NLG was charged only with hydraulic fluid to maintain the correct leg extension. The absence of air pressure in the olio leg resulted in poor shock absorption, which contributed to substantial damage to the engine mounts and flight controls during the hard landing.
- 3.3.2** During the initial exterior inspection, the team members observed the damage listed in Para 2.3. Upon analyzing the damages, it was evident that the aircraft had landed hard on the nose wheel with right rudder applied (right pedal forward), resulting in damage to the engine mounts and right nose wheel steering tube attachments. In addition to the visible damages listed above, it was found that there was no air pressure in the olio pneumatic nose wheel strut. Further investigation revealed that the engine mounting bolt holes had been enlarged due to the impact, and the mounting bolts were severely stressed.
- 3.3.3** There was no evidence of any prior defects or malfunctions in the aircraft flight control systems or engine that could have contributed to the incident. However, the absence of the proper oil-to-air ratio in the NLG olio strut before the flight caused the strut to perform poorly, resulting in adverse consequences to the airframe and the rudder control linkage.

3.4 Flight Operation

- 3.4.1** According to the evidence provided by the Flight Instructor (Pilot-in-Command), he experienced a sudden sink during the final landing of the day. He was unsure whether the aircraft initially touched down on the main wheels or the nose wheel and was unable to confirm if the aircraft was in a banked position during touchdown. However, the aircraft bounced and landed a second time. Given the evident damage sustained, the aircraft experienced a hard landing. The Flight Instructor's failure to recognize the severity of the hard landing raises concerns about his ability to accurately judge the aircraft's flight attitude.
- 3.4.2** The Flight Instructor (FI) stated that he made a tech log entry regarding the incident and requested the technical crew to inspect the aircraft. However, according to the statements of the two technicians, the FI did not inform them about the incident, nor did they see any tech log entry. There is a contradiction between the statements of the FI and the two technicians which raises concerns regarding their integrity.
- 3.4.3** The FI encircled 'Yes' in the "Defects" column of the Tech Log only for the last flight, whereas he had crossed out the 'Yes' column for all previous sorties. This raises suspicion that the tech log entry may have been made much later. This suspicion was confirmed as none of the technicians, the engineering manager, or the certifying staff had seen the tech log entry until Monday. Furthermore, several contradictions between the FI's statements and those of others further reinforce doubts about the accuracy of his account.
- 3.4.4** The FI informed the Engineering Manager about the incident on the same day after the flight. The Engineering Manager inspected the aircraft but failed to detect the damage. Additionally, he did not seek the assistance of the technicians for a more thorough inspection. Despite the FI's claim of making a Tech Log entry, the Engineering Manager did not see any such entry in



the log. The exact damage was only discovered by one of the certifying staff on June 10, 2024 (the following Monday, two days after the incident).

3.5 Safety Reporting Culture

- 3.5.1** The aircraft (4R-ACV) experienced a hard landing on June 8, 2024, and the incident was reported to the CAASL through a Mandatory Occurrence Report on 11th June 2024, just before the completion of the 72-hour reporting deadline.
- 3.5.2** The organization demonstrated a general lack of a proper reporting culture. From the time of the incident, multiple lapses in informing the relevant stakeholders were observed. The two technicians did not inspect the aircraft after the occurrence (raising suspicion about whether the FI had informed them). Instead, they refuelled the aircraft, parked it in the hangar, and left.
- 3.5.3** The Engineering Manager failed to report the damage and the Tech Log entry to relevant post holders, particularly the certifying staff, until the following Monday. Additionally, other student pilots arrived on 10th June 2024, without being informed that the aircraft was unserviceable.
- 3.5.4** The certifying staff was not informed of the hard landing by any personnel and only became aware of it upon personally observing the damage on June 10, 2024

4. Conclusion

4.1 Findings

- 4.1.1** The aircraft had a valid Certificate of Airworthiness and a valid Certificate of Registration.
- 4.1.2** There were no defects reported in the aircraft prior to the flight.
- 4.1.3** It was evident that the aircraft landed on nose with left bank and slip, which in turn affected the lower right bulkhead mounting bolt and its corresponding hole.
- 4.1.4** It was found that the damage occurred due to excessive force applied when the nose gear slipped to the left during the landing rollout. As a result of this force, the nose wheel rotated to the right, causing the torque link to bend.

However, the team found several lapses in communication among pilots, students, technicians, and post holders within the organization, leading to multiple safety concerns, including the following:

- 4.1.5** The Engineering Manager has failed to inform the certifying staff about the exact details of the incident, instead instructing him only to check the aircraft thoroughly.

Malpractice in NLG maintenance was completely overlooked, raising concerns about the credibility of the Maintenance Organization's engineering practices and creating severe safety risks. This represents a significant lapse in the engineering and operations of the Flying Training Organization, as well as a lackadaisical attitude towards flight safety.

- 4.1.6** The FI has failed to identify the extent of the hard landing.
- 4.1.7** During the investigation, it was revealed that the Pilot-in-Command (who was also the Flight Instructor), had no adequate knowledge and understanding, particularly in handling post-hard landing procedures, even after significant damage to the aircraft.
- 4.1.8** It was found that the aircraft had not been maintained as per the Approved Maintenance Programme (AMP) as the nose landing gear strut air pressure was zero at the time of the incident.



4.2 Probable cause(s):

The cause of this incident was the inability of the Flight Instructor to control the aircraft at the last stage of landing.

5 Safety Recommendations

5.1 Asian Aviation Centre (ATO)

- 5.1.1** The ATO shall ensure that all occurrences, including accidents and incidents, are reported to CAASL in accordance with Implementing Standard 006. When reporting to CAASL, the ATO shall use the online reporting system established by CAASL, which is available on the CAASL website.
- 5.1.2** The ATO must ensure that relevant staff adhere to these reporting requirements to improve the reporting culture within the organization.
- 5.1.3** The ATO shall conduct a special assessment, overseen by a CAASL inspector, to ensure that all aircraft maintenance tasks are performed accurately by approved Engineering Post Holders in accordance with the approved AMP. A report shall be submitted to CAASL upon completion.
- 5.1.4** The ATO shall conduct a competency assessment of the Flight Instructor through a flight test on aircraft handling, carried out by an instructor nominated by the DGCA. The assessment report, along with supporting evidence, shall be submitted to CAASL.

- END -