AIRCRAFT INCIDENT SHORT REPORT

CA18/3/2/1248: Omission to lock the landing gear lever, resulting in the inadvertent landing gear-up selection.

Date and time	**:** 2 February 2019, 1030Z
Aircraft registration	**:**ZU-ECE
Aircraft manufacturer and model	**:** Nanchang Dragon C J6-A
Last point of departure	**:** Brakpan Airfield (FABB), Gauteng Province
Next point of intended landing	**:** Brakpan Airfield (FABB), Gauteng Province
Location of incident site with reference to easily defined geographical points (GPS readings if possible)	**:** Taxiway FABB (GPS S 26˚ 14' 17" E 028˚ 18' 21")
Meteorological Information	**:** Wind direction: 330°; Wind speed: 14 kts; SCT021 Visibility: 10km; Temperature: 22° QNH: 1025 hPa
Type of operation	**:** Private (Part 94)
Persons on board	**:**1+1
Injuries	**:** 0
Damage to aircraft	**:**Propeller, nose-wheel cowling and lower-engine cowling

All times given in this report are Coordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose of the Investigation:

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (2011), this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and ***not to apportion blame or liability.***

Disclaimer:

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1. SYNOPSIS

1.1 A pilot and a passenger departed Benoni-Brakpan Aerodrome (FABB) on a private flight with the intention of routing Heidelberg Aerodrome (FAHG) and Springs Aerodrome (FASI), and returning to FABB for one exercise and a landing. The pilot stated that after landing the aircraft, he vacated the runway and came to a stop on the taxiway to carry out the after-landing checks. Later, when the pilot took power to taxi, the nose gear collapsed, and the aircraft nose section impacted the ground.

1.2 The aircraft sustained damage to the propeller, nose wheel cowling and lower fuselage. The pilot and passenger did not sustain any injuries during the incident.

1.3 It is likely that the pilot inadvertently moved the landing gear lever up after omitting to push the latch to the left (locked position). This resulted in the nose gear collapsing when the aircraft was moved forward. The reason the main gears did not collapse is that they retract inwards whilst the nose gear retracts rearwards.

2.1 FACTUAL INFORMATION

2.1.1 A pilot and a passenger took off from FABB on a private flight to conduct touch-and-go landings at FAHG and FASI, and then returning to FABB. The pilot reported that he executed three circuits at FAHG, two circuits at FASI and one circuit at FABB. The flights from FABB to FAHG, FAHG to FASI and FASI to FABB were uneventful.

2.1.2 After one circuit at FABB, the pilot decided to end the operation and land the aircraft. The pilot reported that he had a normal touchdown. He then taxied the aircraft off the runway before stopping on the taxiway to carry out after-landing checks. On completion of the landing checks, he applied power to begin taxiing to the hangar and, as the aircraft began to roll, the nose gear collapsed. The propeller struck the ground and the pilot shutdown the engine before vacating the aircraft. Both the pilot and the passenger did not sustain injuries.

2.1.3 The pilot had a total of 7220 hours of which 39 were on type. The aircraft had 3769.4 airframe hours at the time of the incident. The last annual inspection was on 22 January 2019 at 3767.5 hours and the aircraft was operated for a further 1.9 hours since its last mandatory periodic inspection (MPI).

Figure 1: The aircraft after the nose gear collapsed.
(Photo courtesy of the pilot)

Figure 2: View of the bent propeller blades.
(Photo courtesy of the pilot)

Figure 3: Damaged nose cowling.
(Photo courtesy of the pilot)

2.1.4 The pilot and the passenger suffered no injuries and the aircraft sustained damage to the propeller, nose cowling and lower fuselage.

Figure 4: Google Earth image of FABB. (Source: Google Maps)

2.1.5 According to the Nanchang Dragon aircraft flight manual, Chapter 7, Paragraph 7.7 Undercarriage (see Appendix 1):

Retractable, tricycle, trailing arm, nitrogen-filled, compressed-air actuated.

Red and white mechanical position indicators are located on the wing centre section and forward of the cockpit. They clearly indicate when gear is down. In addition, there are indicator lights on the left-hand side of the instrument panel.

A microswitch drives gear position lights on the up lock and from midwing spar. A microswitch on the folding jackstay assembly energises the circuit.

When gear is down with aircraft load on the wheels, the jackstay is over-centre and thus the gear will not fold even if pressure is removed from the actuating cylinder. In addition, a ball lock prevents the actuating cylinder from retracting unless air [at 140 pressure per square inch (psi)] is admitted to free the lock.

A latch (landing gear lever lock) prevents the gear lever from being moved to the "up" position. This latch is slid leftwards before the gear lever can be moved up. Normal procedure calls for this latch to be slid left (i.e. out) when the aircraft is lined up immediately prior to take-off, and slid right (i.e. in) only after landing. There are two good reasons for this procedure. Firstly, on take-off, it is not desirable to be fumbling with the latch while close to the ground, as there is an observed tendency for the pilot thus engaged to drop the nose. Secondly, the arrangement is designed to prevent inadvertent or accidental gear retraction on the ground...

Figure 6: Landing gear lever and latch.

3 Findings

3.1. The pilot was initially issued with a commercial pilot licence (CPL) on 17 June 2008 with an expiry date of 31 July 2019.

3.2. The pilot was issued with an aviation medical certificate on 16 January 2018 with an expiry date of 31 July 2019.

3.3 This operation was a private flight conducted under visual flight rules (VFR).

3.4 The aircraft had 3769.4 airframe hours at the time of the incident. The last mandatory periodic inspection was on 22 January 2019 at 3767.5 hours. The aircraft had since flown an additional 1.9 hours.

3.5 The aircraft was issued with a Certificate of Registration (C of R) on 8 November 2006.

3.6 The aircraft was issued with an Authority to Fly (ATF) on 23 January 2019 with an expiry date of 21 January 2020.

3.7 Post-accident inspection by the maintenance technician could not find any fault with the landing gear system that would have caused the nose gear to retract.

3.8 It is likely that the pilot inadvertently moved the landing gear lever up after omitting to push the latch to the left (locked position). This resulted in the nose gear collapsing when the aircraft was moved forward. The reason the main gears did not collapse is that they retract inwards whilst the nose gear retracts rearwards.

3.9 Weather conditions were fine and did not contribute to the cause of the incident.

4 PROBABLE CAUSE/CONTRIBUTING FACTOR

4.1 It is likely that the landing gear lever was inadvertently moved up after omitting to push the latch to the left (locked position).

5 REFERENCES USED IN THE REPORT

5.1 Nanchang Dragon aircraft flight manual.

6 SAFETY RECOMMENDATION

6.1 None.

7 ORGANISATION

7.1 None.

8 Appendices

8.1 Appendix 1: Nanchang Dragon aircraft flight manual.

Appendix 1:

7.7. UNDERCARRIAGE

Retractable, tricycle, trailing arm, nitrogen-filled, compressed-air actuated.

Tyres	size	oleo leg nitrogen press	tyre air press
Main	500X150	48 atm	3.2 atm
Nose	400X150	20 atm	2.3 atm

Red and white mechanical position indicators are located on the wing centre section and forward of the cockpit. They clearly indicate when gear is down. In addition there are indicator lights on the left hand side of the instrument panel.

A microswitch drives gear position lights on the up locks and front midwing spar. A microswitch on the folding jackstay assembly energises the circuit.

When gear is down with aircraft load on the wheels, the jackstay is over-centre and thus the gear will not fold even if pressure is removed from the down actuating cylinder. In addition, a ball lock prevents the actuating cylinder from retracting unless air (at 140 psi) is admitted to free the lock.

NOTE

A latch prevents the gear lever from being moved to the "up" position. This latch is slid leftwards before the gear lever can be moved up. Normal procedures call for this latch to be slid left (i.e. out) when the aircraft is lined up immediately prior to takeoff, and slid right (i.e. in) only after landing. There are two good reasons for this procedure. Firstly, on takeoff, it is not desirable to be fumbling with the latch while close to the ground, as there is an observed tendency for the pilot thus engaged to drop the nose. Secondly, the arrangement is designed to prevent inadvertent or accidental gear retraction on the ground. If the latch is normally moved at the same time as the gear lever, this pattern of behaviour becomes reflexive. This defeats the purpose of the latch, because the latch will be unconsciously moved at the same time as the gear lever.