

Accident CEN18LA230
Inspectors Report
Bobby D. Warren

This document is to provide statement of observation and report concerning an investigation of an accident involving Cessna Aircraft Company Model TR182, S/N R18201148, N756SW in Beloit, KS on June 18, 2018.

Initial Notification:

At approximately 12:47 pm local time on June 18, 2018 the Wichita FSDO received an email providing information regarding an occurrence due to landing gear failure on Cessna Aircraft Company Model TR182, S/N R18201148, N756SW in Beloit, KS. The message included pictures showing the aircraft condition. A review of the pictures found the damage would classify the occurrence as an accident. The left horizontal stabilizer and elevator had sustained substantial damage.

The NTSB was contacted via the FAA ROC. The NTSB noted that if ample pictures were available for the on scene evidence, the aircraft could be relocated to a secure location.

I contacted the pilot and aircraft owner Bernard David Neubert and asked what happened. He noted that while doing pattern work in the Beloit area he was attempting to land. When he put the landing gear down he did not get a green gear light. He visually observed the LH main gear was not down. He attempted several landing gear extension. The LH main would not come down. He attempted manual extension with no success. He noted the pump handle was stuck in place and wouldn't move. He elected to land on runway 22. He shut down the engine and conducted a power off landing on the grass runway. The aircraft came to rest at about the midpoint of the runway and off center to the SE about 150ft. The pilot was the only person on board. There were no injuries and no damage to any property other than the aircraft. Visual damage to the aircraft was the left wing tip, left horizontal stabilizer and left elevator. The owner noted the mechanic located at Beloit had recently conducted an annual inspection on the aircraft. During this annual inspection the landing gear had been checked and was working properly.

I advised the owner the aircraft could be moved to a secure hangar. But, I also advised that no maintenance be performed nor investigation into the cause until the FAA were present. I also contacted the local mechanic FBO who assisted with the recovery and advised the same.

On-Scene Investigation:

I arrived at Moritz Memorial Airport on Beloit, KS at approximately 10:00 am on June 19, 2018. The aircraft was secured in a hangar.

Upon arrival, verbal conversation was conducted with the pilot and aircraft owner Bernard David Neubert. He verbally noted during recovery that he observed one of the bolts from the LH main brake caliper was backed out and caught on the fuselage skin in the wheel well area. This extended bolt prevented the landing gear extension. Once bolt was removed, the gear could be dropped from the wheel well.

The mechanic also verbally confirmed a bolt was backed out of the caliper and caught on the belly skin preventing LH gear extension. During recovery from the runway the left main gear brake caliper and wheel assembly were removed to allow gear extension (due to low jack height on site). The wheel and caliper were reinstalled so aircraft could be towed to the hangar. Mechanic and pilot provided a signed statement as to the caliper bolt condition noted during recovery.

Pilot verbally stated the aircraft had no mechanical or controllability issues other than the left gear did not extend.

Aircraft Observation:

Aircraft N756SW was in the hangar resting normally on its landing gear. Visual inspection of the aircraft found damage to the left wingtip. The outboard 1/3rd of the left horizontal stabilizer and elevator were bent approximately 20 degrees up. No other observable damage was noted.

The tachometer was showing 781.4 hrs and had a placard on the face noting "Old tach 2880.2". The pilot stated that these two times combined was aircraft total time. The aircraft total time is 3661.6.

The aircraft current registration and airworthiness certificate were verified on board the aircraft.

It was observed that neither the left or right brake caliper backing plate bolts were safety wired.

Per mechanic verbal statement the brake calipers were removed during recent annual inspection to allow the main wheel removal for inspection and repacking of bearings.

Aircraft Records Review:

A review of the aircraft records found an annual inspection was completed on 06/12/2018, at aircraft total time of 3658.4. This record entry annotated landing gear test OK and emergency gear extension OK.

The records indicate IFR certification to comply with 14 CFR 91.411 and 91.413 was completed on June 13, 2018

No deficiencies were noted with airworthiness directive compliance review.

No deficiencies were noted with the 14 CFR Part 91 aircraft record requirements.

Landing Gear System Inspection:

After my initial observation, the aircraft was placed on jacks.

A visual check of brake caliper backing plate bolt clearance to fuselage found there is about 1/2" clearance between the fuselage skin at the wheel well opening and the brake caliper backing plate bolts when the bolts are installed.

There was visible surface scratching in the area where an extended backing plate bolt would likely contact the fuselage skin.

A landing gear system operational check was conducted. A normal electric/hydraulic gear extension and retraction, as well as, emergency extension were performed. No deficiencies or component interference issues were observed at this time.

During verbal discussion, I asked the mechanic if the brake caliper backing plate bolts were safety wired after installation during the annual inspection work. He stated they were not.

I visually observed the main brake caliper backing plate bolts were not safety wired on the undisturbed right main gear brake caliper.

Cessna TR182 Maintenance Manual Review:

The Cessna R182 and TR182 Service Manual Section 5-2 states in part, "For emergency extension of the gear, the selector handle must be in the DOWN position before the hand pump will energize the system".

The Cessna R182 and TR182 Service Manual Figure 5.10 contains the note for the brake caliper backing plate bolts that states, "Torque to 100-110 IN-LBS & Safety-Wire".

The Cessna R182 and TR182 Service Manual Section 5-169 Brake Installation subsection (j) states, "Install back plate with bolts and washers, torque to 110-120 in.-lbs."

Inspectors Opinion and Conclusion:

Per the pilot's statement, a landing gear system operational check and visual observation, there is no evidence to indicate any mechanical or system failures for the aircraft.

The evidence and statements provided indicate at least one of the left brake caliper backing plate bolts was not properly torqued during assembly at recent annual inspection.

The brake caliper backing plate bolts were not safety wired as annotated in The Cessna R182 and TR182 Service Manual Figure 5.10.

An annual inspection was conducted 6 days and 3.2 flight hours before the accident occurred.

During the 3.2 hours the aircraft was operated after the annual inspection, evidence indicates at least one of the left brake caliper backing plate bolts loosened to the point that it extended beyond the 1/2" available clearance from the fuselage skin at the left wheel well opening. The extended bolt caught on the fuselage skin and prevented the left gear from extending.

The mechanic performing the work on the wheel and brake system during annual inspection did not accomplish the installation of the left brake caliper in accordance with the manufacturer's instructions for continued airworthiness. He did not properly torque and safety wire the brake caliper backing plate bolts.

There is a minor disparity between Figure 5-10 and Section 5-169(j) with regard to the brake caliper backing plate bolt torque values. However, if the bolts in question had been properly torqued to either listed range they would have remained secured for 3.2 hours. This would be further insured had the bolts been safety wired as specified.

Discussion with the pilot regarding the emergency extension, he could not remember if the gear selector was in the down position when he tried the extension and could get the handle to release. As per Cessna R182 and TR182 Service Manual Section 5-2 the selector handle must be in the DOWN position before the hand pump will energize the system. The emergency extension system worked properly when completed as described in the Section 5-2 of the service manual.

[Redacted Signature]

Date: 06/29/2018

Bobby D. Warren, Wichita FSDO