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Cessna 340A – N346MC

Landing Gear Examination Factual Report

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LANDING GEAR EXAMINATION

After the accident, the airplane was recovered to Bakersfield Aviation Services at Meadows Field Airport (BFL), Bakersfield, California. Under the direction of the National Transportation Safety Board Investigator-in-Charge, the proprietor of Bakersfield Aviation Services was asked not to allow anyone near the accident airplane without the consent of the NTSB. The landing gear examination was completed in a timely manner to return the wreckage to the pilot who required the airplane for his business.

The examination team was comprised of two airframe and powerplant mechanics with oversight from the NTSB. Prior to the NTSB's arrival, the mechanics installed a wood plank to stabilize the right main landing gear (*see photograph 1*). An initial inspection of the landing gear system revealed the right main landing gear aft tube rod end, which normally connects to a bellcrank, had broken about mid-span (*see photograph 2*). The left main landing gear aft tube rod end was stiff at the trunnion bearing, but the assembly remained intact. The overcenter adjustment for both main landing gear appeared normal, but displayed different thread measurements; the right main landing gear aft tube measured 14/32 at the fork bolt and the left main landing gear aft tube measured 10/32 at the fork bolt. Both main landing gear fork bolts appeared turned slightly away from being centered with the aft tube.

The main landing gear was cycled multiple times to review the torque tube positions. The torque tubes for both the left and right main landing gear appeared to be in the same position when the gear was retracted and extended. The uplock push/pull tube to the right main landing gear displayed a downward bend of approximated 12 degrees and a one inch scrape signature on the bottom of the tube. Normally the push/pull tube is suspended in space through a rib between the torque tube and the uplock hook. A visual inspection of the top side of the rib revealed a scrape signature similar in length to the push/pull tube.

Both main landing gear fork bolt connections were visually inspected. The inboard attachment end of the aft tube to the left main landing gear did not move freely at the rod end, but did rotate at the jam nut. The right main landing gear aft tube rod end moved freely at the inboard rod end attachment.

The floor panels and seats were removed to facilitate an examination of the landing gear motor assembly and drive tubes. The gear motor and drive tubes were intact and displayed no evidence of deformation or damage. The up and down limit switches mounted to the gear motor were secured to their respective mounting brackets. The Cessna 340A service manual requires the presence of DC-4 (Dow Corning 4) silicon compound on both limit switches; however, both switches were void of this insulation. The landing gear instrument indications were observed

during a gear swing test to verify the lights were working properly. The landing gear was first retracted manually about halfway and then electrically until the nose landing gear and left main landing gear were stowed in the up position. The right main landing gear did not retract during the test. All three lights were red during the gear retraction and the each of the three landing gear lights appeared off when the gear was stowed. The three landing gear were then manually extended; the nose and left main landing gear green lights illuminated. The right main landing gear light did not illuminate and a red "Gear Unlocked" indication was present.

Plastic sheathing was removed from the right main landing gear down switch wire and the contact leads were removed from the switch to facilitate switch testing, which confirmed continuity of the switch.

A hanging scale was used to measure the over center tension for the left main landing gear only as the right main landing gear aft tube had failed. The hook end of the hanging scale was attached to the lock link and pulled at a right angle. The left main landing gear down lock tension was about 43 lbs. (*see photograph 3*). According to the manufacturer, the prescribed tension is 40 to 60 lbs. for proper engagement and tension.



Photograph 1: Right Main Landing Gear Prior to Examination



Photograph 2: Right Main Landing Gear Aft Tube Rod End



Photograph 3: Right Main Landing Gear Downlock Tension