Aviation Investigation Final Report

Location:	Talkeetna, Alaska	**Accident Number:**	ANC02LA050
Date & Time:	June 14, 2002, 23:59 Local	**Registration:**	N333DG
Aircraft:	Cessna 185F	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The certificated commercial pilot, with one passenger aboard, was departing from a 900 foot long gravel bar in a tail wheel equipped airplane. The flight was operated as an on-demand charter flight. During acceleration for takeoff, after reaching about 45 knots, the left main landing gear strut fractured above the left wheel axle. The upper portion of the gear strut dug into the ground, and the airplane swerved to the left. The airplane continued off the left side of the site, and the right wing struck the ground. The airplane sustained substantial damage to the right wing and fuselage. The operator reported that a visual inspection of the fractured landing gear strut revealed a fracture through the upper two holes in the gear strut. The lower end of the spring steel landing gear strut has four holes drilled through the metal in a box pattern. The axle is attached to the outboard side of the strut. Neither the manufacturer nor the FAA have established a life limit (hours or cycles) for the main landing gear strut. An annual inspection does not require disassembly of the axle from the gear strut. No inspection procedures, other than a general visual inspection of the landing gear, have been specified by the manufacturer or the FAA. On March 16, 2001, the NTSB recommended that the FAA issue an airworthiness directive (AD) to require an initial and recurring inspection of Cessna main landing gear spring steel struts, using nondestructive inspection techniques. On August 31, 2001, the FAA reported to the NTSB that the current inspection criteria outlined in the Cessna Maintenance Manual are adequate to detect cracks in the main landing gear struts, and that additional airworthiness action is not warranted. On March 25, 2002, the NTSB responded by stating, in part: "The Safety Board continues to believe that a visual inspection alone will not detect cracks in the Cessna main landing gear spring struts. However, the Safety Board acknowledges that the statistical evidence does not warrant issuance of ADs at this time as called for in the Board's recommendation." The safety recommendation was then classified as: "Closed-Reconsidered."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A fracture failure of the lower end of the spring steel landing gear strut. Factors contributing to the accident were the manufacturer's and the FAA's insufficient standards/requirements for inspection procedures.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (C) LANDING GEAR,MAIN GEAR STRUT - FRACTURED
2. (F) ACFT/EQUIP,INADEQUATE STANDARD/REQUIREMENT - MANUFACTURER
3. (F) INSUFFICIENT STANDARDS/REQUIREMENTS - FAA(ORGANIZATION)

Occurrence #2: GEAR COLLAPSED
Phase of Operation: TAKEOFF - ROLL/RUN

Factual Information

On June 14, 2002, about 2359 Alaska daylight time, a wheel-equipped Cessna 185F airplane, N333DG, sustained substantial damage when the right wing struck the ground following a main landing gear strut failure during takeoff from an off airport site located about 30 miles northwest of Talkeetna, Alaska. The airplane was being operated as a visual flight rules (VFR) on-demand charter flight under Title 14, CFR Part 135, when the accident occurred. The certificated commercial pilot, and the one passenger, were not injured. Visual meteorological conditions prevailed, and a company flight plan was in effect.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge on June 15, the pilot reported that during acceleration for takeoff from a 900 foot long gravel bar, after reaching about 45 knots, the left main landing gear strut fractured above the left wheel axle. The upper portion of the gear strut dug into the ground, and the airplane swerved to the left. The airplane continued off the left side of the site, and the right wing struck the ground. The airplane sustained substantial damage to the right wing and fuselage.

The lower end of the spring steel landing gear strut has four holes drilled through the metal in a box pattern. The axle assembly, utilized when wheels and tires are installed, is attached to the outboard side of the strut.

The operator reported that a visual inspection of the fractured landing gear strut revealed a fracture through the upper two holes in the gear strut. At the time of the accident, the airplane had accumulated about 6,042 hours in service. The time in service of the failed gear strut is unknown.

Currently, neither the manufacturer (Cessna Aircraft), nor the Federal Aviation Administration (FAA), have established a life limit (hours or cycles) for the main landing gear strut. An annual inspection does not require disassembly of the axle from the gear strut. The manufacturer, or the FAA, has specified no inspection procedures, other than a general visual inspection of the landing gear.

On March 16, 2001, in a letter addressed to the FAA's administrator in Washington D.C., the NTSB recommended that the FAA issue an airworthiness directive (AD) to require an initial and recurring inspections of Cessna main landing gear spring steel struts, using nondestructive inspection techniques. On August 31, 2001, the FAA reported to the NTSB that the current visual inspection criteria outlined in the Cessna Maintenance Manual are adequate to detect cracks in the main landing gear struts, and that additional airworthiness action is not warranted. On March 25, 2002, the NTSB responded by stating, in part: "The Safety Board continues to believe that a visual inspection alone will not detect cracks in the Cessna main

landing gear spring struts. However, the Safety Board acknowledges that the statistical evidence does not warrant issuance of ADs at this time as called for in the Board's recommendation." The safety recommendation was then classified as: "Closed-Reconsidered."

Pilot Information

Certificate:	Commercial	**Age:**	48,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 31, 2002
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 30, 2002
Flight Time:	17800 hours (Total, all aircraft), 13000 hours (Total, this make and model), 17780 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N333DG
Model/Series:	185F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18503234
Landing Gear Type:	Tailwheel	**Seats:**	6
Date/Type of Last Inspection:	100 hour	**Certified Max Gross Wt.:**	3520 lbs
Time Since Last Inspection:	146 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6042.6 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520
Registered Owner:	Doug Geeting Aviation	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	INYC

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	100 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	-7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Talkeetna, AK (TKA)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Talkeetna, AK (TKA)	**Type of Clearance:**	None
Departure Time:	11:00 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	61.900001,-150.083892

Administrative Information

Investigator In Charge (IIC):	Johnson, Clinton
Additional Participating Persons:	Craig A Johnson ; Federal Aviation Administration; Anchorage, AK
Original Publish Date:	April 18, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=54970