Aviation Investigation Final Report

Location:	Santa Fe, New Mexico	**Accident Number:**	DEN08LA064
Date & Time:	March 12, 2008, 11:40 Local	**Registration:**	N17662
Aircraft:	Spartan 7W	**Aircraft Damage:**	Substantial
Defining Event:	Aircraft structural failure	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was practicing full stop landings and he made a "firm" landing. Shortly thereafter, the right main landing gear collapsed and the airplane began veering to the right. The pilot made corrective inputs but could not maintain directional control. The airplane departed the runway. The left main landing gear then collapsed. Both wings were bent and the fuselage sustained bulkhead damage. According to NTSB's Materials Laboratory report, the right main landing gear strut "appeared relatively rough and light gray consistent with overstress fracture of a cast aluminum alloy." Examination of the corner radius where the outboard support flange intersects the vertical tube "showed areas with a smooth faceted appearance with curving boundaries consistent with fatigue." Examination of the fractures faces of the left main landing gear strut "showed features indicative of overstress separation...An area of the fracture surface was smooth and shiny, features consistent with smearing associated with the compression side of an overstress fracture in bending."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Fatigue failure of the right main landing gear, rendering directional control impossible and causing an overload failure of the left main landing gear.

Findings

Aircraft	Main gear strut/axle/truck - Failure
Aircraft	Main gear strut/axle/truck - Fatigue/wear/corrosion
Aircraft	Directional control - Attain/maintain not possible
Aircraft	Main gear strut/axle/truck - Capability exceeded

Factual Information

History of Flight

Landing-landing roll	Aircraft structural failure (Defining event)

On March 12, 2008, at 1140 mountain daylight time, a Spartan 7W, N17662, registered to and operated by the pilot, was substantially damaged when the main landing gear collapsed during a stop and go landing on runway 33 at Santa Fe Municipal Airport (SAF), Santa Fe, New Mexico. Visual meteorological conditions (VMC) prevailed at the time of the accident. The personal flight was being conducted under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91 without a flight plan. The pilot and a pilot-rated passenger were not injured. The local flight originated at SAF approximately 1030.

According to the pilot's accident report, he was practicing full stop landings on runway 33. The airplane landed "firmly" on the main landing gear and on centerline. Shortly thereafter, the right main landing gear collapsed and the airplane began veering to the right. The pilot made corrective inputs but could not maintain directional control. The airplane departed the runway. The left main landing gear then collapsed. Both wings were bent and the fuselage sustained bulkhead damage.

The airplane was removed from the runway, taken to a hangar, and placed on jacks. Both left and right main trunions were sent to NTSB's Materials Laboratory for examination. According to the metallurgist's factual report, the fracture surfaces of the right main landing gear strut "appeared relatively rough and light gray consistent with overstress fracture of a cast aluminum alloy." Examination of the corner radius where the outboard support flange intersects the vertical tube "showed areas with a smooth faceted appearance with curving boundaries consistent with fatigue." The fracture faces of the left main landing gear strut "showed features indicative of overstress separation...An area of the fracture surface was smooth and shiny, features consistent with smearing associated with the compression side of an overstress fracture in bending."

Pilot Information

Certificate:	Private	**Age:**	68,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 1, 2007
Flight Time:	5037 hours (Total, all aircraft), 60 hours (Total, this make and model), 4985 hours (Pilot In Command, all aircraft), 16 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Information

Certificate:	Airline transport; Commercial; Flight engineer	**Age:**	53,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	April 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Spartan	**Registration:**	N17662
Model/Series:	7W	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28
Landing Gear Type:	Retractable - Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	March 1, 2008 Annual	**Certified Max Gross Wt.:**	4400 lbs
Time Since Last Inspection:	2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	9410 Hrs as of last inspection	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	R-985AN-14-8
Registered Owner:	Ronald E. Tarrson	**Rated Power:**	450 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SAF,6348 ft msl	**Distance from Accident Site:**	
Observation Time:	11:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 18 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	350°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	14°C / -8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Santa Fe, MA (SAF)	**Type of Flight Plan Filed:**	None
Destination:	(SAF)	**Type of Clearance:**	VFR
Departure Time:	10:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Santa Fe Municipal SAF	**Runway Surface Type:**	Asphalt
Airport Elevation:	6348 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	33	**IFR Approach:**	Unknown
Runway Length/Width:	6307 ft / 150 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	35.6175,-106.093612

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	Richard S Cramer; FAA Flight Standards District Office; Albuquerque, NM
Original Publish Date:	August 28, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67688