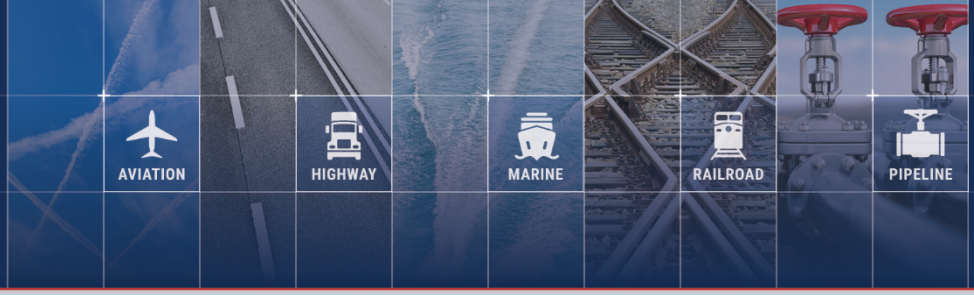

Aviation Investigation Final Report

Location:	Alpine, Texas	**Accident Number:**	CEN09LA284
Date & Time:	May 8, 2009, 10:30 Local	**Registration:**	N60HG
Aircraft:	Cessna 421B	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

Shortly after departure, when the airplane was about 400 feet in the air, the right engine stopped producing power. The pilot conducted a forced landing in a nearby field. An on-site inspection revealed that the airplane fuel tanks contained plenty of fuel. A post accident examination of the engines was conducted. An engine monitor was downloaded; a sudden decrease in cylinder head (CHT) and exhaust gas (EGT) temperature readings were observed for the right engine. A visual inspection of the engine revealed that the idler gear support pin, located on the rear of the engine, had backed out. The idler pin's retaining hardware (two nuts and lock-washers) were missing. The idler pin's movement allowed the idler gear to drop and become disconnected from the magnetos drive gear, resulting in a loss of engine ignition. Additionally, due to the mis-located idler gear, the accessory drive gears on the cam and crankshafts were either ground down or broken. Disassembly of the engine, found numerous metal pieces in the engine's oil sump.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to disengagement of the magneto idler gear support pin.

Findings

Aircraft	(general) - Malfunction
Aircraft	(general) - Not specified
Aircraft	Magneto/distributor - Malfunction

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)
Initial climb	Off-field or emergency landing
Initial climb	Collision with terr/obj (non-CFIT)

On May 8, 2009, approximately 1030 central daylight time, a twin-engine Cessna 421B, N60HG, was substantially damaged during a forced landing following the loss of engine power shortly after takeoff, near Alpine, Texas. The commercial pilot, sole occupant, received minor injuries during the forced landing. The airplane was registered and operated by O'Hara Flying Service, Amarillo, Texas. Visual meteorological conditions prevailed and a flight plan was not filed for the Title 14 Code of Federal Regulations Part (CFR) 91 positioning flight destined for the Rick Husband Amarillo International Airport (AMA), Amarillo, Texas.

The pilot reported that, shortly after takeoff when the airplane was about 400 feet in the air, the right engine stopped producing power. As the pilot reached up to feather the right engine, the left engine "surged and sounded like it was going to quit." The pilot moved the engine controls forward, and looked for a place for a forced landing. The pilot added that he felt he did not have full power on the left engine. The airplane impacted several small bushes during the off-airfield landing.

A Federal Aviation Administration (FAA) inspector who responded to the site reported that the airplane had plenty of fuel and that it appeared consistent with 100LL aviation grade fuel.

An examination of the aircraft wreckage was conducted by the NTSB Investigator-in-Charge (IIC), along with technical representatives from the airframe and engine manufacturers, at Air Salvage of Dallas (ASOD) on 28 May, 2009.

A JPI engine monitor was downloaded; a sudden decrease in cylinder head (CHT) and exhaust gas (EGT) temperature readings were observed for the right engine. A visual inspection of the engine revealed that the idler gear support pin, located on the rear of the motor, had backed out. The idler pin's retaining hardware (two nuts and lock-washers) were missing. The idler pin's movement allowed the idler gear to drop, and become disconnected from the magneto drive gears, resulting in a loss of engine ignition. The idler gear teeth were severely worn. Additionally, the accessory drive gears on the cam and crankshafts were either ground down or broken. Disassembly of the engine, found numerous metal pieces in the engine's oil sump.

Examination of the left engine and engine monitor readings, revealed no apparent abnormalities. The engine was rotated to obtain thumb compression and drive train continuity. Each cylinder was borescoped; the sparkplugs were light gray in color and appeared "normal."

The magnetos were removed and rotated by hand, producing spark at each terminal. The engine's oil filer was cut open, inspected, and was found to be clear of any metal.

Pilot Information

Certificate:	Airline transport	**Age:**	49,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	May 5, 2008
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	February 9, 2009
Flight Time:	8818 hours (Total, all aircraft), 95 hours (Total, this make and model), 8060 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N60HG
Model/Series:	421B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	421B0534
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	April 1, 2009 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	7543 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Not installed	**Engine Model/Series:**	GTSIO-520-C
Registered Owner:	O'HARA FLYING SERVICE II LP	**Rated Power:**	340 Horsepower
Operator:	O'HARA FLYING SERVICE II LP	**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KE38	**Distance from Accident Site:**	
Observation Time:	10:26 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	31°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Alpine, TX	**Type of Flight Plan Filed:**	None
Destination:	Amarillo, TX (AMA)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Airport Information

Airport:	Alpine-Casparis Municipal Apt E38	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	30.429063,-103.32933(est)

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Dan Vengen; FAA FSDO; Lubbock, TX Tom Moody; Cessna Aircraft Company; Wichita, KS John Kent; Continental Aircraft Engines; Mobile, AL
Original Publish Date:	April 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=73805