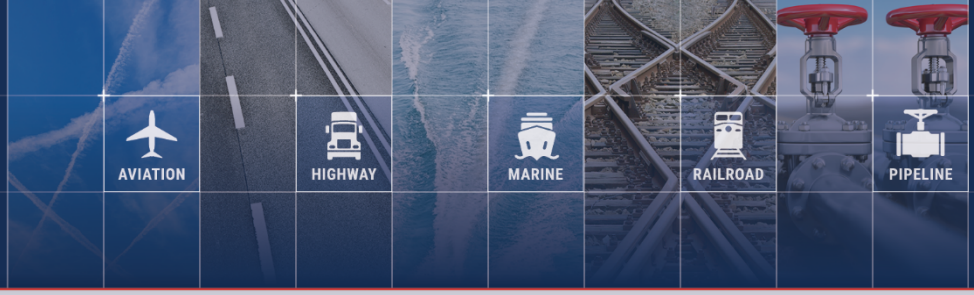

Aviation Investigation Final Report

Location:	Slaton, Texas	**Accident Number:**	CEN10LA140
Date & Time:	March 5, 2010, 16:30 Local	**Registration:**	N2036Y
Aircraft:	Beech A36	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While at 5,500 feet mean sea level, the pilot heard a loud explosion and the left front engine cowling blew open. Shortly thereafter the engine stopped producing power and the pilot executed a forced landing to a flat plowed field. The No. 2 cylinder was found separated from the engine crankcase. A postaccident engine teardown examination revealed that there had been an insufficient clamping force between the crankcase halves and between each cylinder and the crankcase. In particular, the No. 2 crankcase cylinder deck exhibited signatures consistent with the No. 2 cylinder vibrating back and forth before it exited the engine case. At the time of the accident, the engine had accumulated approximately 1,072 hours since major overhaul and 641 hours since a top overhaul.

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 the insufficient clamping force between the two crankcase halves and each cylinder to the crankcase.

Findings

Aircraft	Recip eng cyl section - Malfunction

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Loss of engine power (total)
Landing	Off-field or emergency landing
Landing-landing roll	Nose over/nose down

On March 5, 2010, about 1630 central standard time, a single-engine, Beech A36 airplane, N2036Y, was substantially damaged during a forced landing following a total loss of engine power while in cruise fight near Slaton, Texas. The private pilot, the sole occupant, sustained minor injuries. The airplane was registered to and operated by the pilot. Visual meteorological conditions prevailed and a flight plan was filed for the 14 Code of Federal Regulations Part 91 personal flight. The 256 mile cross-country flight departed the Lubbock Preston Smith International Airport (LBB), Lubbock, Texas, about 1620 with the Dallas Executive Airport (RBD), Dallas, Texas, as the intended destination.

According to the pilot, while at 5,500 feet, he heard a “loud explosion” and the left front engine cowling blew open. Shortly thereafter, oil appeared on the windscreen and the engine stopped producing power. The pilot executed a forced landing to a flat plowed field. The airplane’s left wing separated at impact and the airplane came to rest in a nose down, but upright position. The pilot was able to exit the airplane unassisted.

The Federal Aviation Administration (FAA) inspector who responded to the accident site reported, that the engine’s #2 cylinder was found separated from the engine crankcase.

The engine, a Teledyne Continental Motors (TCM), IO-550-B-12B, serial number 271728-R, was examined at TCM in Mobile, Alabama. Oversight was provided by the NTSB investigator-in-charge (IIC). The examination revealed that all crankcase main bearing surfaces, except for #5, exhibited fretting wear. In addition, the crankcase cylinder decks exhibited wear patterns consistent with movement between all cylinders and the crankcase.

Additionally, the crankcase exhibited signatures consistent with the #2 cylinder rocking back and forth before it exited the engine case. The #2 piston to crankshaft connecting rod cap was found separated from the connecting rod. The #2 piston pin had been pulled through the lower section of piston, suggesting that the connecting rod to crankshaft separation was a secondary failure.

A review of the engine logbook revealed that the engine was overhauled on March 29, 2002. At the time of the accident, the engine had accumulated approximately 1,072 hours since major overhaul and 641 hours since a top overhaul.

On May 29, 1992, TCM issued Service Bulletin (SB) M92-9, which was applicable to all Continental 470's, 520's, and 550's. This SB instructed that "at overhaul or when necessary … a 12 point nut must be used … and torqued to 790 – 810 inch lbs." The accident engine was equipped with the earlier 6 point nuts which had a required torque of 690 – 710 in lbs. This nut is used on the crankcase through bolts and to secure the cylinders to the crankcase. It was also noted that the SB was not mandatory since the airplane was being operated under 14 Code of Federal Regulations Part 91.

Pilot Information

Certificate:	Private	**Age:**	69,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	April 23, 2009
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 28, 2009
Flight Time:	3500 hours (Total, all aircraft), 1800 hours (Total, this make and model), 30 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N2036Y
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-1366
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	August 1, 2009 Annual	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:	77 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5834 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, activated	**Engine Model/Series:**	IO 550-B
Registered Owner:	GALE DONALD H	**Rated Power:**	300 Horsepower
Operator:	GALE DONALD H	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	LBB,3282 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	15:53 Local	**Direction from Accident Site:**	315°
Lowest Cloud Condition:	Few / 7000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	21°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lubbock, TX (LBB)	**Type of Flight Plan Filed:**	None
Destination:	Dallas, TX (RBD)	**Type of Clearance:**	VFR flight following
Departure Time:	16:20 Local	**Type of Airspace:**	

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:**	33.490554,-101.587501(est)

Administrative Information

Investigator In Charge (IIC):	LeBaron, Timothy
Additional Participating Persons:	Mona Roberts; FAA Lubbock FSDO; Lubbock, TX John Kent ; Teledyne Continental Motors, Inc; Mobile, AL
Original Publish Date:	April 12, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=75453