



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

Western Pacific Region

4 August, 2015

AIRFRAME AND ENGINE EXAMINATION

WPR15FA227

This document contains 26 embedded photos.

Examination Report N4CU - Cessna P337G

Tuesday, August 04, 2015

9:51 AM

Participants:

Van McKenny National Transportation Safety Board Investigator-in-Charge Los Angeles, CA	Ernie Hall Textron Aviation Aviation Safety Investigator Whichta, KS
Rafael Munguia Federal Aviation Administration Maintenance Inspector Van Nuys, CA	

Exam Location:

On-Scene
3 miles east of Santa Paula Airport
Santa Paula, CA

Accident Location:

City:	Santa Paula, CA
Latitude/Longitude:	N 34 20.430 / W 119 0.795
Elevation:	1,223 ft msl

Circumstances/Terrain:



On-scene wreckage (front view)



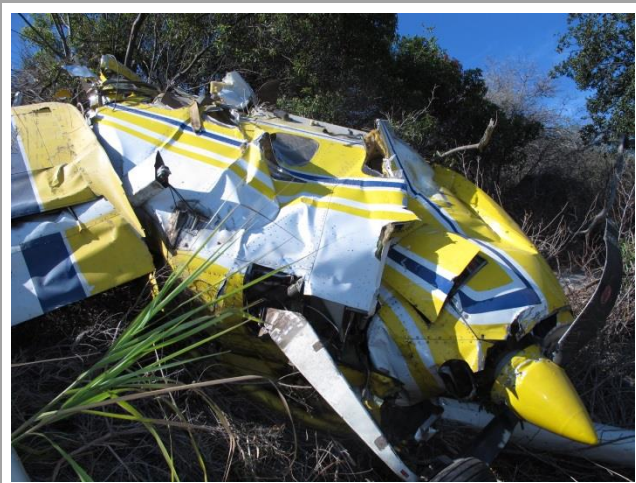
On-scene wreckage (left side view)

Airplane wreckage located by California Resources Corporation employee who was working at the South Mountain Booster Plant. He located the wreckage about 1400 PDT on Saturday, August 1. Witnesses reported seeing the airplane takeoff from Santa Paula Airport at 0902 into a 300 foot overcast. The wreckage was located on the north side of South Mountain on a 40 degree slope populated with scrub trees and a couple of live oaks, at the 1,223 foot level. It was oriented on a bearing of 137° magnetic measured from tail to nose. The initial point of impact was the left wingtip identified by wingtip fairing fragments and topped off small trees/brush next to the main impact ground scar. Contained within the ground scar was landing gear door. Clipped brush and ground scar evidence is consistent with a level attitude at time of impact. The airplane traveled upslope 20-30 feet beyond the initial impact point, along a 205° magnetic bearing.

Examination Summary:

On-scene examination of the airplane was performed. All flight control surfaces were present, and flight control systems were traced and found continuous. Fuel was confirmed present in the left wing fuel tank and in each of the engine distribution valves. Both engine crankshafts were rotated manually and thumb compression achieved on all cylinders. Both propellers exhibited leading edge damage and blade tip damage consistent with power application.

Airframe:



Fuselage from the left side.



Fuselage and rear engine.

Airplane was located on a 40° slope upright with wings and tail sections intact. Wings had separated at the wing roots but remained next to their approximate location along the fuselage. The forward firewall was displaced aft into the cockpit instrument panel and the cockpit floor was displaced upward into the cabin. The left tail boom remained attached to left wing and extended aft. The stabilizer and elevator remained attached to the tail booms. Both vertical fins and rudders remained attached to the tailbooms. The

forward engine was displaced down and to the left, the propeller had separated from the crank shaft behind the propeller flange. The aft engine remained attached to the aft engine mount and displaced to the right. The propeller remained attached to the engine.

- SN: P3370065
- Fuselage was offset to the right (laying on right side)
- Right landing gear had separated at the mount and gear leg located by the left wingtip.
- Left landing gear remained attached to the mount on the fuselage.
- Nose gear upper trunion remained attached to the fuselage. The lower section (wheel) had separated and located 15 feet downhill from the tail boom.
- Left Wing
 - Leading edge damage along outboard 5 feet with aft ward diagonal buckling to the tip. Wing tip fairing not on the wing.
 - Outboard 5 feet of wing bent upward approximately 30°. Large leading edge dent just forward of left wing filler port.
 - Aileron remained attached to the wing. Control cable continuity was established to the fuselage. Balance cable was continuous from the left wing to the right wing. Control & balance cable ends were attached to the aileron bell crank.
 - Both flaps remained attached to the wing, in the 30° down position. Flap cable exhibited separation in tensile overload.
 - Tailboom remained attached to wing structure.
 - Fuel cap remained secure. Fuel cap o-ring exhibited no cracking or stiffness. An undetermined amount of fuel was observed when viewed through filler port.



Left wing.

- Tail Section
 - Both vertical fins with attached rudders and the stabilizer with the elevator all remained attached to both tail booms.
 - Tearing, dents, and gouges from impact observed on the bottom side of the vertical fins and stabilizer.
 - Elevator trim cable continuity established to the right wing root. Elevator trim actuator measured 1.5 in extension measured from the stabilizer rear spar to the center of the eye end bolt.
 - Rudder and elevator cables were continuous from the cabin fuselage through the tailboom to their respective bell cranks in the tail.



Tail section with left and right tail booms.



Stabilizer and elevator.

- Right Wing
 - Tailboom separated from the wing structure at the wing trailing edge.
 - Leading edge crushing long mid span.
 - Wing bent upward approximately 5° outboard of the fuel filler port.
 - Filler cap was in place and secure. Fuel cap o-ring exhibited no cracking or stiffness. No fuel was observed through the filler port.
 - Flaps were attached to the wing in the up position.
 - Aileron was attached to the wing. Control cable continuity was established to the fuselage. Balance cable was continuous from the left wing to the right wing. Control & balance cable ends were attached to the aileron bell crank.
 - Wing tip fairing had separated from the wing.

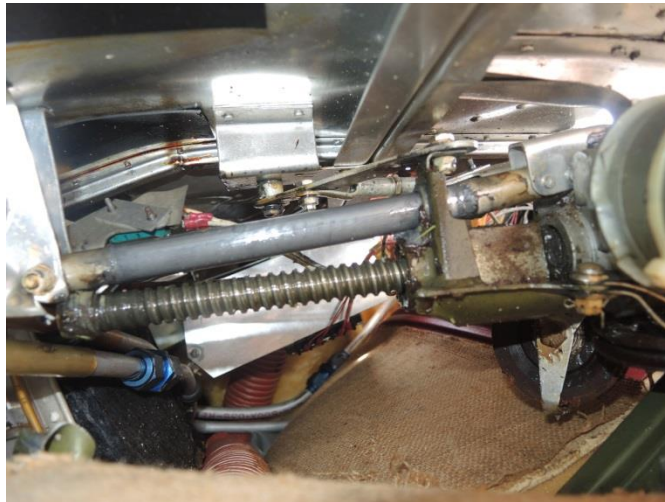


Inboard section of the right wing.



Outboard section of the right wing.

- Flap actuator was found in the full retracted position.



Flap jackscrew.



Flap jackscrew close up.

- Forward fuel strainer assembly
 - Bluish tint fluid filled the bowl (constant with 100LL)
 - Filter screen clear of debris.
 - Tested negative for water using KolorKut paste.



Front engine fuel filter & bowl.



Fuel drained from front engine bowl.



Front engine fuel water test.

Cockpit:

Cockpit roof was partially removed and pulled back by first responders in order extract the pilot.

- Aileron cable chains remained on the sprockets.
- Rudder pedals were displaced up and aft.
- Copilots rudder cables were attached to rudder pedals.
- Instrument panel exhibited impact damage

HSI	330°
RMI	330°
Hobbs	0.0
Stby Compass card	200°
Throttle Fwd & Aft	Mid range
Mixture Fwd & Aft	Mid range
Prop Fwd & Aft	Mid range
Flap	0°
Attd Gyro	Right wing 90 down
Suction	beyond 6 inHg
VSI	600 fpm up
Fuel Sel - Front Eng	Right tank
Fuel Sel - Rear Eng	Right tank

RPM - Front	0
RPM - Rear	0
RadAlt	200 feet
Airspeed	0
Ignition - front	Knob broken off
Ignition - Rear	Knob broken off

- ELT
 - Leigh Systems Inc.
 - Mod: 7A-I-101
 - SN: 2014
 - Found in the wreckage in the OFF position. Coax antenna connection was attached.
 - Battery replace date: May 2017
 - ELT was turned ON, placed next to AM radio antenna and no signal was detected on AM radio.

Front Engine:

- Rolls Royce TSIO-360DG
- SN: 50R354
- HP: 225
- Propeller separated at the crank shaft behind the propeller flange
- Impact damage to the oil pan and underside of engine.
- All throttle body connections in place.
- Magnetos remained attached to the engine.
- Vacuum pump had separated from the engine by impact forces. Rotor fragment and blade showed normal wear, and no scoring was observed on the interior case of the pump. Drive coupling was intact.
- Fuel distribution valve wire tied. Valve opened and bluish fluid observed, screen clear, and diaphragm undamaged.
- Top spark plugs (RHM38E) were removed from all 6 cylinders. Exhibited normal wear. No mechanical damage observed.
- The engine crankshaft was rotated using the vacuum pump drive. Rotation achieved thumb compression on all cylinders.
- Valve covers removed from cylinders 2, 4, 6. Valves moved in sequence.
- Fuel pump had fractured revealing the rotor and vanes. Pump rotated by hand. Drive spline receiver had fractured.



Front engine, left side.



Front engine, right side with valve covers removed.



Front engine, fuel distribution valve showing fuel present.

Rear Engine:

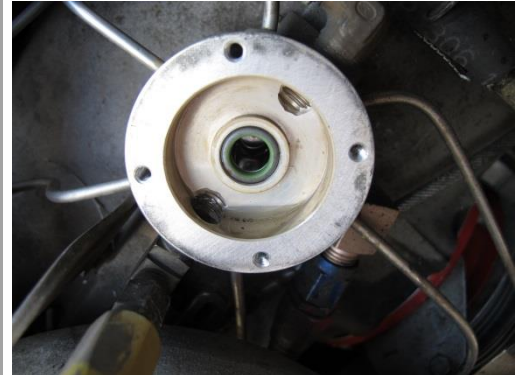
- Continental TSIO-360C(5B)
- SN: 224369R
- HP: 225
- Propeller remained attached to the engine/propeller flange.
- Rotational scoring observed along the skirt of the propeller spinner.
- Both magnetos remained attached to the engine.
- Vacuum pump remained attached to the engine. The pump cover was removed. The rotor and blades were undamaged.
- All throttle body connections in place
- Fuel distribution valve wire tied. Valve opened and bluish fluid observed, screen clear, and diaphragm undamaged.
- Top spark plugs (RHM38E) were removed from all 6 cylinders. Exhibited normal wear. No mechanical damage observed.
- The propeller was removed from the propeller flange. The engine crankshaft was rotated by the prop flange. Rotation achieved thumb compression on all cylinders.
- Valve covers removed from cylinders 1,2,3,4,5, & 6. Valves moved in sequence. The magneto impulse coupling could be heard.
- Fuel pump was removed and bluish tint fluid drained from the pump. Pump rotated by hand then disassembled. The rotor and vanes were in tact and no scoring evident. The fuel pump drive spline was intact.



Rear engine, left side.



Rear engine, top view.



Rear engine, fuel distribution valve showing fuel present.

Front Propeller:

- McCaulley Hub Model No. D2AF34C303-A
- SN: 725627
- Hub separated from the engine.
- Blade 1 - twisted towards noncamber side at mid span. Leading edge gouges mid span and at the tip. Blade face polishing & chordwise scratches midspan out to blade tip.
- Blade 2 - slight leading edge damage. Longitudinal scratches.
- Spinner crushed aft over the propeller dome.



Front propeller.



Front propeller, blade 1



Front propeller, blade 2

Rear Propeller:

- McCaulley Hub No. D2AF34C305-A
- SN: 792704
- Hub remained attached to the engine.
- Both blades loose in the hub.
- Blade 1 - bent to the noncamber side at midspan, leading edge gouge towards tip, blade tip fractured off.

- Blade 2 - Bent to the noncamber side, blade tip fractured off



Real propeller spinner.



Rear propeller.



Rear propeller.