



Air Safety Investigation →

Single Engine Field Notes

Mishap Date:	February 12, 2006	Mishap Time (24 hr.):	1130 PST
Aircraft Registration:	N540FT	Air Safety Investigator:	Mark W. Platt
Aircraft Manufacturer:	Carpenter B 1996	Aircraft Model:	Glasair II-S FT
Location:	Roseville, CA	Aircraft S/N:	2107
On Scene Examination:	No	Aircraft Damage:	Destroyed
Federal IIC:	Tealeye Cornejo	NTSB Report#:	LAX06LA110

Engine:	Engine
Model	O-540-E4B5
Serial Number	L-10666-40
Total Time	unk Hours Since Field O/H
Crankshaft S/N	unk
Case Match #	unk

Propeller:	Manufacturer	Part Number	Serial Number
	Hartzell	HC-C2YK-1BF	CH16864

Injuries:	Number	Fatal	Serious	Minor	None
Crew	1	1	0	0	0
Passengers	1	1	0	0	0
Ground		1	0	0	

Registered Owner: -----

San Clemente, CA

Operator: Pilot/owner

Pilot: Patrick Allen O'Brien

Medical, Date Issued: 3rd class, 11/04

Pilot Rating: Private, ASEL

Summary:

On February 12, 2006, about 1130 Pacific Standard Time, an experimental amateur built Carpenter BJ/Carpenter SA Glasair II-S FT, registered as N540FT, impacted a house in Roseville, California. The pilot, a private pilot certificated passenger, and one person inside the house were fatally injured. The airplane and house were destroyed in the ensuing post-impact fire. The private pilot/owner operated the airplane under the provisions of 14 CFR Part 91. There were no other ground injuries. Visual meteorological conditions prevailed for the local area flight that departed Lincoln Regional Airport/Karl Harder Field (LHM), Lincoln, California, about 1115. A flight plan had not been filed.

According to several witnesses in the area, the airplane had been seen earlier that morning performing aerobatics in the area.

Engine Data

Model	Serial Number	Total Time
O-540-E4B5	L-10666-40	Unknown Hours Since Field O/H

Above engine Information taken from: Engine data plate.

Case Match # Unknown Engine S/N on Case: L-10666-40

Crankshaft S/N: Unknown

Last Annual Inspection by: Unknown Date Unknown

Last Overhaul by: Lynn's Aircraft Engine, Inc. Date Unknown

Maintenance Records Attached? ☐ Yes ☒ No

On-Scene Exam? ☐ Yes ☒ No

Propeller Attached? ☒ Yes ☐ No

Was Engine Disturbed Prior to Your Arrival? ☒ Yes ☐ No

Does Engine Appear to be run able? ☐ Yes ☒ No

Does Crankshaft Rotate? ☒ Yes ☐ No

Evidence of Fire? ☐ Yes ☒ No

Comments:

There was no National Transportation Safety Board or Lycoming Engines travel to the mishap site. Investigators from the Federal Aviation Administration, Flight Standards District Office (FAA-FSDO) responded and documented the mishap site.

The aircraft was subsequently removed from the site and transported to the facilities of Air Transport, Phoenix, Arizona, where a subsequent examination was conducted March 15, 2006.

The aircraft was destroyed by impact energy and ensuing post mishap ground fire. All of the engines accessories were destroyed by thermal effect and therefore could not be tested. Reference photographs attached to this report for views of the subject aircraft wreckage.

Engine Data

Propeller

Manufacturer	Part Number	Serial Number
Hartzell	HC-C2YK-1BF	CH16864

Propeller Type ☒ Metal ☐ Wood ☐ Composite ☐ Unknown

Propeller Blade Serial Numbers:

Blade 1 Unknown

Blade 2 Unknown

Blade 3 n/a

Blade 4 n/a

Propeller Governor

Manufacturer	Part Number	Serial Number
Hartzell	Unknown	Unknown

Gasket Screen Condition: Clean

Governor Oil Line: Properly Secured? ☐ Yes ☐ No ☐ Unknown ☒ N/A
Correct Line Nuts? ☐ Yes ☐ No ☐ Unknown ☒ N/A
Correct Fittings? ☐ Yes ☐ No ☐ Unknown ☒ N/A

Propeller Comments:

The two bladed constant speed propeller remained attached at the crankshaft flange. The propeller (photos 74-80) had been subjected to the thermal effects of the post impact ground fire. The spinner was consumed. One of the propeller blades had been consumed by the fire leaving approximately 14 inches of blade attached to the hub. The opposing blade remained intact and exhibited an 80 degree aft bend about mid-span.

The propeller governor was securely attached at the mounting pad with the pitch control rod securely attached at the control wheel. The governor was removed for examination. The drive was intact and free to hand rotate. The gasket screen was free of visible contamination.

Engine Data

Fuel System

☒ Injection ☐ Carburetor

Manufacturer: Unknown Model: Unknown Setting: Unknown

Serial. No.: Unknown Floats: ☐ Metal ☐ Composite ☐ Plastic

Fuel Screens

Carburetor/Injector Inlet: ☐ Clean ☐ Contaminated ☒ Unknown
Aircraft Main Fuel Strainer: ☐ Clean ☐ Contaminated ☒ Unknown

Flow Divider

Manufacturer: Unknown Part No.: Unknown Serial No.: Unknown

Evidence of Fuel Found? ☐ Yes ☐ No ☐ Unknown

Injector Nozzles:

Type: ☒ One Piece ☐ Two Piece ☐ Unknown

Condition: ☐ Open ☐ Plugged ☒ Unknown

Fuel Pump:

☒ Diaphragm ☐ Geared ☐ Unknown ☐ None

Manufacturer: Unknown Part No.: Unknown Serial # / Date Code: Unknown

Fuel System Comments:

An aftermarket fuel injection system by Airflow Performance had been installed.

The fuel injection servo was displaced from the engine and the portion that remained attached at the mounting pad was secure. The fracture surface signatures were consistent with overload. The thermal effects of the post impact ground fire consumed the fuel injection servo and induction system. There was no data plate found.

The fuel flow divider (photos 27-28) was consumed by the post impact ground fire. All that remained were the steel componets and fuel injection fuel lines.

The fuel injection nozzles remained secure at each cylinder with the fuel line attached. The nozzles (photo 29) had been subjected to the thermal effects of the post impact ground fire, thus sustaining varying degrees of damage.

The fuel pump (photo 22) was partially consumed and destroyed resulting from the thermal effects of the post impact ground fire. The fuel pump mounting flange remained attached at the mounting pad. The two mounting bolts remained in-place and properly safety wired.

Engine Data

Ignition System:

Magnetos:

☒ Left or ☐ Dual Magneto

Manufacturer: Bendix Model: S6LN-21 P/N 10-51365-57 S/N 339606
Impulse Coupling? ☒ Yes ☐ No Functioning? ☐ Yes ☒ No ☐ Unknown
Timing Checked? ☐ Yes ☒ No Results: _____
Damage: Destroyed by fire

Right Magneto

Manufacturer: n/a Model: n/a P/N n/a S/N n/a
Impulse Coupling? ☐ Yes ☐ No Functioning? ☐ Yes ☐ No ☐ Unknown
Timing Checked? ☐ Yes ☐ No Results: _____
Damage: _____

Magneto Comments:

Reference the "Engine Observations" narrative for more information.

Spark Plugs

Manufacturer: _____ Type: _____ SI 1042 Approved? ☐ Yes ☐ No

1 Top	<u>Autolite 386 automotive</u>	1 Bottom	<u>Champion REM-40E</u>
2 Top	<u>Champion REM-40E</u>	2 Bottom	<u>Autolite 386 automotive</u>
3 Top	<u>Autolite 386 automotive</u>	3 Bottom	<u>Champion REM-40E</u>
4 Top	<u>Champion REM-40E</u>	4 Bottom	<u>Autolite 386 automotive</u>
5 Top	<u>Autolite 386 automotive</u>	5 Bottom	<u>Champion REM-40E</u>
6 Top	<u>Champion REM-40E</u>	6 Bottom	<u>Autolite 386 automotive</u>
7 Top	_____	7 Bottom	_____
8 Top	_____	8 Bottom	_____

Spark Plug Comments:

The fire damaged spark plugs of varying type (as noted) were secure at each position. The spark plugs were removed, examined and photographed. The spark plug electrodes remained mechanically undamaged, and displayed varying coloration consistent with being exposed to the effects of the post impact ground fire. Reference photographs 19-21 for views of the spark plugs, as removed.

Ignition Harness

Tested: ☐ Yes ☒ No Condition: Destroyed

Comments:

The ignition harness had been subjected to post mishap ground fire and had sustained thermal damage. The harness appeared to have been attached at each spark plug lead.

Engine Data

Starter:

Manufacturer: Unknown

Part No.: Unknown

Serial No.: Unknown

Comments: The starter was displaced from the engine and destroyed. The subject starter was not examined.

Alternator:

Manufacturer: Unknown

Part No.: Unknown

Serial No.: Unknown

Comments: The alternator was detached from the engine and destroyed. The subject alternator was not examined.

Generator:

Manufacturer: n/a

Part No.: n/a

Serial No.: n/a

Comments:

Vacuum Pump:

Manufacturer: Unknown

Part No.: Unknown

Serial No.: Unknown

Comments: The vacuum pump was displaced from the engine at the mounting pad. The fracture surface signatures were consistent with overload. The vacuum pump was destroyed by fire and not available for examination.

☐ Stand-by Pump or ☐ Aux. Pump:

Manufacturer: _____

Part No.: _____

Serial No.: _____

Lubrication System:

Oil Suction Screen: ☐ Clean ☒ Contaminated ☐ Unknown

Oil Pressure Screen: ☐ Clean ☐ Contaminated ☐ Unknown ☒ N/A

Oil Filter: ☒ Clean ☐ Contaminated ☐ Unknown ☐ N/A

Oil Cooler Integrity: ☐ Secure ☐ Leaking ☒ Unknown ☐ N/A

Oil Cooler Hoses: ☐ Tight ☐ Leaking ☒ Unknown ☐ N/A

Oil System Comments:

Two pieces of unidentified material (photos 69-73) were recovered from the oil suction screen. The screen was otherwise unobstructed. The oil filter was cut open to expose the filter media, which was free of visible contaminants.

Engine Data

Turbo System:

☐ Single or ☐ Left

☒ Page Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Rotate? ☐ Yes ☐ No

Functioning? ☐ Yes ☐ No ☐ Unknown

Damage: _____

☐ Right

Manufacturer: _____

Part No.: _____

Serial No.: _____

Rotate? ☐ Yes ☐ No

Functioning? ☐ Yes ☐ No ☐ Unknown

Damage: _____

Density Controller

☐ Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Differential Control

☐ Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Variable Absolute Controller

☐ Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Slope Controller

☐ Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Manifold Pressure Relief Valve ☐ Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Exhaust Bypass Valve

☐ Not Applicable on this engine model.

Manufacturer: _____

Part No.: _____

Serial No.: _____

Comments:

Engine Observations

The subject wreckage and engine were examined March 15, 2006, at the facilities of Plain Parts, Pleasant Grove, California, under the auspices of the National Transportation Safety Board, Investigator in charge (NTSB-IIC).

According to the attached Lycoming engine data plate, the powerplant is a six cylinder, air cooled, direct drive, horizontally opposed, normally aspirated (carburetor), internal combustion engine rated at 260hp @ 2700rpm.

An aftermarket fuel injection system and electronic ignition system had been installed onto the engine at the time of the field overhaul.

The engine had sustained severe thermal effect damage resulting from the post impact ground fire. Visual examination of the engine revealed no evidence of pre-impact catastrophic mechanical malfunction or fire.

Mechanical continuity was established during the disassembly of the engine. The cylinders combustion chamber and barrels remained mechanically undamaged, and there was no evidence of foreign object ingestion or detonation. The valves were intact and undamaged. There was no evidence of valve to piston face contact observed. The pistons were intact. The ring assemblies at each piston were intact and free to rotate within their respective ring land. The gas path and combustion signatures observed at the spark plugs, combustion chambers and exhaust system components displayed varying degrees of coloration consistent with the exposure to the effects of the post impact ground fire and subsequent suppression (water) operation. There was no oil residue observed in the exhaust system gas path. Mechanical continuity of the rotating group and internal mechanisms were established visually during the disassembly and examination of the engine. The accessory gears including the crankshaft gear, bolt and dowel were intact and remained undamaged by any pre-impact malfunction. There was no evidence of lubrication deprivation or contamination found. The crankshaft and attached connecting rods remained free of heat distress. There were no signatures or conditions observed consistent with any pre-mishap catastrophic mechanical malfunction. The camshaft was intact and each of the camlobes appeared normal in their shape.

The left magneto (photo 14) remained secure at the mounting pad. The magneto had been subjected to thermal effect as a result of the post impact ground fire. The magneto sustained varying degrees of damage that rendered the unit inoperative and therefore, could not be functionally tested. Magneto to engine timing could not be ascertained.

The right magneto had been previously removed and a "block-off plate" had been installed (photo 13) on the mounting pad. An electronic ignition system by Electroair had been installed which utilizes a trigger sensor (photo 30) behind the crankshaft flange. The thermal effects of the post impact ground fire destroyed the electronic ignition system.