



Continental Motors

ENGINE EXAMINATION REPORT

ENGINE MODEL	A65
ENGINE SERIAL NUMBER	5464468
AIRCRAFT MAKE & MODEL	Aeronca 7AC
AIRCRAFT SERIAL NUMBER	7AC-3089
AIRCRAFT REGISTRATION	N84396
FILE NUMBER	17-532

NAME	SIGNATURE	DATE
Nicole L. Charnon		05/18/2018

ENGINE EXAMINATION REPORT**FILE NUMBER:**

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546448

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EXAMINATION		ACCIDENT DATA	
DATE	05/17/2018	NTSB ACCIDENT #	ERA18FA141
FACILITY	Anglin Aircraft Recovery Services, LLC	NTSB INVESTIGATOR	Doug Brazy
ADDRESS	4901 Holletts Corner Road Clayton, Delaware 19938	FAA INVESTIGATOR	Tom Mancuso
		ACCIDENT DATE	05/05/2018
		ACCIDENT LOCATION	Middletown, New York

ENGINE INFORMATION

ENGINE POSITION	Single Engine
TOTAL TIME	2,964.0 Hours
TIME SOH	364.3 Hours
TYPE & TIME SLI	4.6 Hours
BUILD DATE	Unknown – SN not found in database
IN SERVICE DATE	Unknown

Significant logbook information:

Photographs of aircraft, engine, and propeller logbooks revealed that the engine underwent a 100-hour inspection on December 2, 2017 at a tachometer time of 1,328.87 hours, an engine total time of 2,959.40 hours, and a time since major overhaul of 359.70 hours. The entry for the 100-hour inspection indicated that compression test was performed and the sparkplugs were checked. The entry also noted "no oil or screen (low time)". The tachometer time at the accident site read 1,333.47 hours.

Report Summary:

Search Code(s):

15-12-68

No pre-impact anomalies were noted with the engine or engine-related systems that would preclude its ability to produce full, rated power.

Disposition of engine following exam:

The engine and engine-related systems were left at the aircraft recovery facility awaiting final release from the NTSB investigator-in-charge (IIC).

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INSPECTION WITNESSES

NAME	Nicole L. Charnon	NAME	Brian Rayner
ADDRESS	Washington, DC	ADDRESS	Ashburn, VA
ORGANIZATION	Continental Motors	ORGANIZATION	NTSB – Eastern Region
PHONE		PHONE	

EXTERNAL ENGINE CONDITION

The engine was separated from the airframe, but the fuel tank, forward airframe structure, and firewall remained with the engine and were all symmetrically deformed around the backside of the engine. The propeller hub remained attached to the propeller flange and the spinner dome was flattened aft symmetrically. Both of the fixed-pitch wooden blades were separated, with the fractures of blade oriented aft. The carburetor mount was fractured and was previously examined by the NTSB IIC at the accident site.

The fuel tank, firewall, engine and airframe mounts, and exhaust systems were removed to facilitate examination of the engine. Upon removal of the firewall, it was noted that the magneto mounting flanges were fractured. The fuel tank was punctured and torn in multiple locations.



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ENGINE COMPONENT EXAMINATION

EXHAUST SYSTEM	
Condition:	The exhaust system remained attached to the engine and the tailpipes were flattened. No pre-accident anomalies were noted



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INDUCTION SYSTEM

Condition:

The induction airbox was deformed around the carburetor bowl. The filter remained in place in its bracket. The pleats were deformed but unobstructed. The backside of the filter displayed a light blue tint. The throttle valve functioned properly and no obstructions were noted in the intake system.



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IGNITION SYSTEM

LEFT MAGNETO

Manufacturer: Unison Slick

P/N: 4333

S/N: 02120915

Condition: The magneto mounting flange was fractured, but the magneto remained in place until the firewall was removed and the damaged ignition harness leads were cut. Manual rotation of the drive gear resulted in a spark from the cut ignition leads, in firing order when the impulse coupling snapped. No pre-accident anomalies were noted.



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RIGHT MAGNETO

Manufacturer: Unison Slick

P/N: 4333

S/N: 02120912

Condition: The magneto mounting flange was fractured, but the magneto remained in place until the firewall was removed and the damaged ignition harness leads were cut. Manual rotation of the drive gear resulted in a spark from the cut ignition leads, in firing order when the impulse coupling snapped. No pre-accident anomalies were noted.



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IGNITION HARNESS

Manufacturer: Unison Slick

Left: M-1960

Right: M-1970

Condition:

The ignition harness sustained pinching and tearing damage from the firewall impingement. The leads were cut to remove the damaged areas. The leads produced a spark at the cuts with no pre-accident anomalies noted. The terminal ends remained secured to their respective sparkplugs.



SPARKPLUGS

Manufacturer: Unison Autolite

P/N: REM40E

Condition:

The sparkplugs remained secured to their respective cylinders with no pre-accident anomalies noted. The top sparkplugs were removed and all displayed lean operating signatures with no signs of lead or carbon fouling. The bottom sparkplugs were documented utilizing a lighted borescope. The #2 and #4 bottom plugs were oil soaked.



1T



1B

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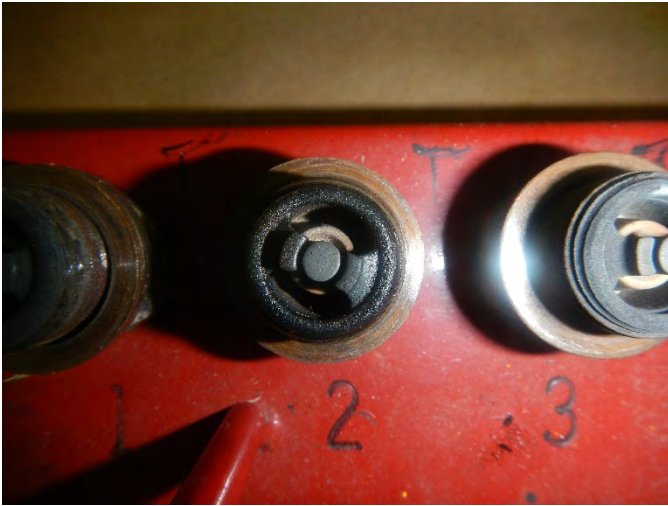
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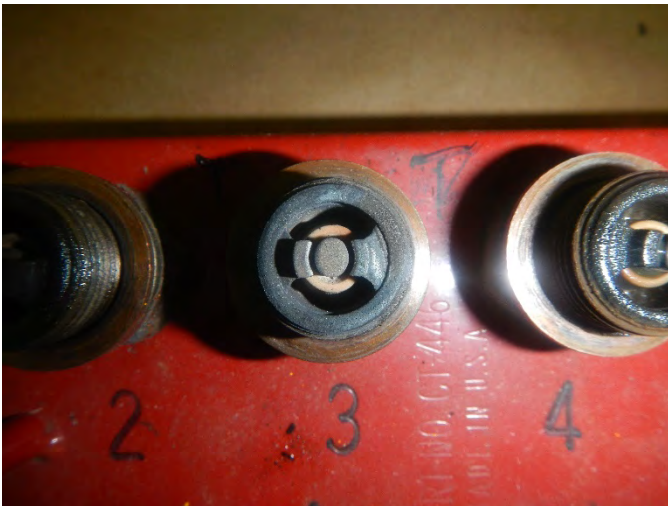
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2T



2B



3T



3B



4T



4B

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FUEL SYSTEM

CARBURETOR

Manufacturer: Stromberg

P/N: Unknown

S/N: Unknown

Condition:

The carburetor mounting flange was fractured and the carburetor with induction airbox were separated from the engine. The inlet fitting was fractured. The carburetor was previously examined at the accident site. Upon disassembly, the NTSB IIC noticed no fuel in the carburetor bowl. During the follow-on examination, the carburetor components were examined with no pre-accident anomalies noted with the inlet screen, needle, float, throttle valve, venturi, or nozzles. Rust colored powder and corrosion was adhering to the bowl walls, but the corrosion was not loose or obstructing any orifices. The carburetor float and needle were reassembled in the carburetor bowl and the bowl was filled with water. With the bowl filled, no fluid leaked out of the fractured inlet fitting. With the bowl only about $\frac{3}{4}$ full, the float would drop and fluid would leak from the fractured fitting.



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LUBRICATION SYSTEM

OIL SUMP

Condition: The oil sump sustained significant deformation damage, but remained attached to the bottom of the engine. No pre-accident anomalies were noted with the sump and all of the engine components appeared well lubricated.



OIL PICKUP TUBE & SCREEN

Condition: The oil pickup tube and screen were not observed.

OIL PUMP

Condition: The oil pump was not observed, but there were no signs of lubrication distress on any of the engine components.

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OIL SCREEN

Condition:

The oil screen was secured in place with safety-wire. Removal of the screen showed small flakes of non-ferrous metallic material as well as dirt and carbon-like material, but the screen was not obstructed or blocked.



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CYLINDERS

NOTE: The photographs that follow each cylinder description represent the cylinder overhead components, the piston, intake valve, and exhaust valves in that order.

CYLINDER #1

Condition:

The cylinder remained attached to the crankcase with no external anomalies noted. The rocker cover was removed and the rockers were intact as were the springs. The cylinder was inspected and documented via a lighted borescope with no pre-accident anomalies noted with the piston, barrel, cylinder head, valves or valve seats. The cylinder produced thumb compression and the rockers/valves moved through their normal range during crankshaft rotation.



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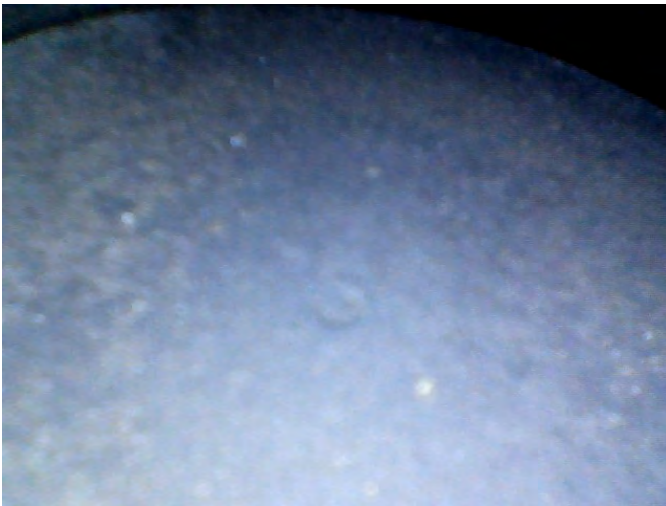
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CYLINDER #3

Condition: The cylinder remained attached to the crankcase with no external anomalies noted. The rocker cover was removed and the rockers were intact as were the springs. The cylinder was inspected and documented via a lighted borescope with no pre-accident anomalies noted with the piston, barrel, cylinder head, valves or valve seats. The cylinder produced thumb compression and the rockers/valves moved through their normal range during crankshaft rotation.



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CYLINDER #2

Condition: The cylinder remained attached to the crankcase with no external anomalies noted. The rocker cover was removed and the rockers were intact as were the springs. The cylinder was inspected and documented via a lighted borescope with no pre-accident anomalies noted with the piston, barrel, cylinder head, valves or valve seats. Oil was observed in the cylinder and coated the cylinder components. The cylinder produced thumb compression and the rockers/valves moved through their normal range during crankshaft rotation.



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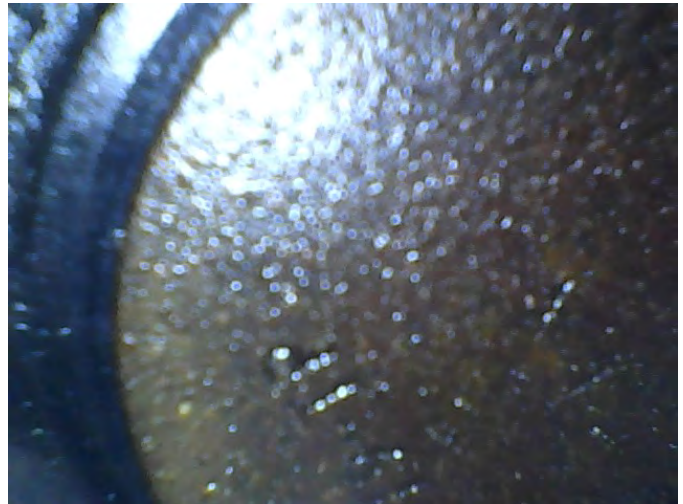
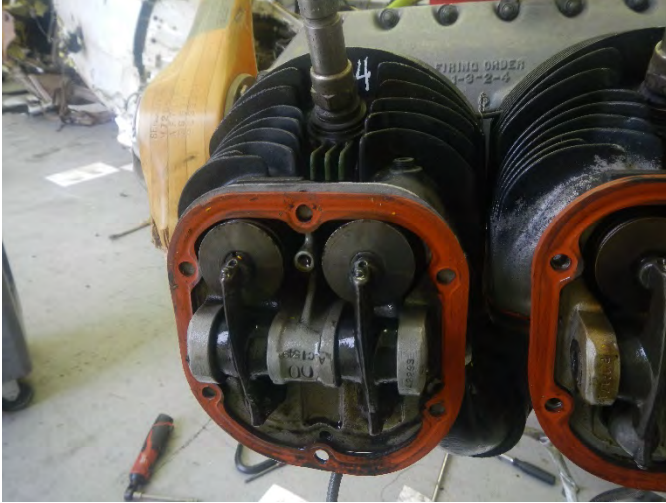
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CYLINDER #4

Condition: The cylinder remained attached to the crankcase with no external anomalies noted. The rocker cover was removed and the rockers were intact as were the springs. The cylinder was inspected and documented via a lighted borescope with no pre-accident anomalies noted with the piston, barrel, cylinder head, valves or valve seats. Oil was pooled in the cylinder and coated the cylinder components. The cylinder produced thumb compression and the rockers/valves moved through their normal range during crankshaft rotation.



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CRANKCASE ASSEMBLY

CRANKCASE

Condition: The crankcase halves and accessory case remained intact and secured to each other. No external pre-accident anomalies were noted. Rotation of the crankshaft did not result in any binding from the main bearings.



CRANKSHAFT ASSEMBLY

CRANKSHAFT

Condition: The crankshaft was not observed in its entirety, but continuity was confirmed from the propeller aft to the accessory end, and out to each connecting rod and piston. No pre-accident anomalies were noted with the crankshaft or crankshaft gear.



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CAMSHAFT

CAMSHAFT	
Condition:	The camshaft was not viewed in its entirety, but camshaft and valvetrain continuity were confirmed during crankshaft rotation and the thumb compression test.
ACCESSORY GEARS	
Condition:	No pre-accident anomalies were noted with the accessory end gears.

PROPELLER

PROPELLER	Manufacturer: Sensenich	P/N: W72CK40	S/N: AF7219
Condition:	The fixed-pitch wooden propeller remained attached to the crankshaft. Both blades were fractured, with the fractures of one blade bent aft. The propeller spinner dome was flattened aft symmetrically against the hub. The propeller bolt nuts left an impression on the crankcase nose seal area with no sign of rotational smearing noted in the impressions.		



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