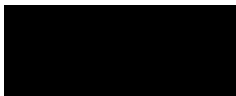
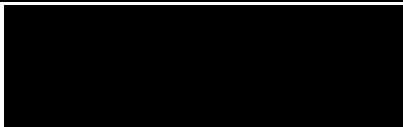




Continental Motors

ENGINE EXAMINATION REPORT

ENGINE MODEL	TSIO550C (11B)
ENGINE SERIAL NUMBER	802858
AIRCRAFT MAKE & MODEL	Cessna 400-LC41-550FG
AIRCRAFT SERIAL NUMBER	41800
AIRCRAFT REGISTRATION	N972JK
FILE NUMBER	16-351

NAME	SIGNATURE	DATE
		03/20/2017

ENGINE EXAMINATION REPORT

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GENERAL INFORMATION

EXAMINATION		ACCIDENT DATA	
DATE	3-20-2017	NTSB ACCIDENT #	CEN17FA071
FACILITY	Continental Motors Inc.	NTSB INVESTIGATOR	Alex Lemishko, NTSB IIC. Central Region
ADDRESS	[REDACTED]	FAA INVESTIGATOR	Danny Brickey, FAA IIC – Little Rock FSDO
		ACCIDENT DATE	1-5-2017
		ACCIDENT LOCATION	Gurdon, Arkansas

ENGINE INFORMATION

ENGINE POSITION	Single
TOTAL TIME	418.6 at last oil change 1-5-2017
TIME SOH	N/A
TYPE & TIME SLI	Undetermined-Hobbs meter not recovered
BUILD DATE	3-14-2007
IN SERVICE DATE	10-8-2007

Significant logbook information:

DATE -- 7 OCT 2015
MAKE -- COLUMBIA
M/N -- 400
S/N -- 41800
REG. # N61BP
HOBBS: 310.1

ENTER IN : AIRFRAME/ENGINE RECORD

Complied with the following in accordance with Cessna 400 AMM unless otherwise noted: Preliminary Inspection accomplished in accordance with Aero Industries, Inc. Form 005.

- Engine will not stay running when cold, replace engine fuel manifold valve. Removed and replaced fuel manifold valve. Removed P/N 646433-14A1 S/N C07AA183 and installed (new) P/N 646433-12A4 S/N C151A165 in accordance with CMI TS10-55Q M/M, leak check good.
- Comply with fuel set-up on engine: Complied with fuel set-up per SID97-3F using Porta-Tester. Parameters as follows: Low pressure fuel 8.4, adjusted idle mixture 1 ¼ turns CW (Lean), Magneto rise 40 RPMs, adjusted slope 1 blade width CCW, decreased manifold pressure to 35.6, adjusted high pressure fuel ¼ turn CCW, increased fuel flow to 38.0 @ 2580 RPM, all per SID97-3F. Removed test equipment, leak check good.
- Complied with Cessna SEL-71-04 dated 9/24/15 using CMI CSB15-2 dated 7/2/15 for removing existing manifold AN918-XX and installing new manifold P/N 658607 per CSB, leak check good on engine run.
- Autopilot kicks off (Get pitch trim and roll trim lights): Removed pitch and roll servo's and adjusted torque settings on capstans. Re-installed pitch and roll servo mounts per Garmin G1000 M/M and Cessna 400 AMM, operational check good. Complied with autopilot return to service check per G1000 M/M, operational check good.

The maintenance described above was inspected and repaired in accordance with current technical data and FAA Regulations and with respect to the work performed, the aircraft is approved for return to service. Complied with final inspection for work accomplished under this work order. 68460

Signature: [REDACTED]

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01.07.2017 20:36

Date	Total Time		Time Since Last Overhaul	
	Hrs.	Min.	Hrs.	Min.
Brought Forward →				

Engine Service and Maintenance Record

Installations, Inspections, Airworthiness Directives, Special Inspections, Modifications and Service Bulletins



The World's Most Experienced Cessna Corvallis Service Facility

FAA CRS# VNFR171L

N812PV H.M. 325.5 Engine Total: 325.5 06/02/2016 W.O. SV4614
TCM TSIO-550-C(11) S/N: 802858

PERFORMED A 100 HOUR/ANNUAL INSPECTION IN ACCORDANCE WITH FAR 43 WITH REFERENCE TO CESSNA 400 MAINTENANCE MANUAL 400MM05. COMPRESSIONS: #1 72 #2 76 #3 66 #4 75 #5 64 #6 68/80. OBTAINED WARM OIL SAMPLE FOR ROUTINE ANALYSIS. CHANGED OIL & FILTER, SERVICED WITH PHILLIPS 20W50 AND NEW CH48109-1 OIL FILTER; NO DEFECTS NOTED IN REMOVED FILTER MEDIA. INSTALLED 7 NEW VALVE COVER GASKETS. AD'S CHECKED THROUGH BIWEEKLY 2016-12.
I CERTIFY THAT THIS ENGINE HAS BEEN INSPECTED IN ACCORDANCE WITH A 100 HOUR/ANNUAL INSPECTION AND WAS DETERMINED TO BE IN AIRWORTHY CONDITION. PERTINENT DETAILS OF THE REPAIRS ARE ON FILE AT THIS REPAIR STATION UNDER THIS WORK ORDER.

INSPECTOR



World's Most Experienced Cessna Corvallis Service Facility

FAA CRS# VNFR171L

N972JK H.M. 335.9 Engine Total: 335.9 09/19/2016 W.O. SV4777
TCM Model: TSIO-550-C(11) Serial: 802858

INSTALLED NEW IMPULSE COUPLING SPRING, P/N 10-51324, ON LEFT MAGNETO AND TIMED MAGNETO TO 24°. INSTALLED TWO NEW SPARK PLUGS, P/N URH832E, IN #5 CYLINDER. OPERATIONAL TEST SATISFACTORY.
THE AIRCRAFT IDENTIFIED ABOVE WAS REPAIRED AND INSPECTED IN ACCORDANCE WITH CURRENT REGULATIONS OF THE FEDERAL AVIATION ADMINISTRATION AND IS APPROVED FOR RETURN TO SERVICE WITH RESPECT TO THE WORK ABOVE. PERTINENT DETAILS OF THE REPAIRS ARE ON FILE AT THIS REPAIR STATION UNDER THIS WORK ORDER.

INSPECTOR

10/7/11 TCM/HM: 355.8
Change oil & filter. Serviced with 8 qts of

11/9/16 TCM/HM: 389.6
Change oil & filter. Serviced with 8 qts of

1/5/17 TCM/HM: 419.6
Change oil & filter. Serviced with 8 qts of

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PAGE 4 of 11**Report Summary:**

Search Code(s):

15-12-68

There were no pre-impact anomalies noted which would have prevented normal operation or production of full rated horsepower. The fuel system components were disassembled and no anomalies noted. The magneto's were heated and to dry the moisture from the interior and produced a spark across a 7MM gap.

Disposition of engine following exam: The engine will be returned to Dawson Aircraft and held in storage until released by NTSB IIC.

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PAGE 5 of 11**INSPECTION WITNESSES**

NAME	Phillip Grice	NAME	Greg Eastburn
ADDRESS	Mobile, Alabama	ADDRESS	Mobile, Alabama
ORGANIZATION	Continental Motors	ORGANIZATION	Continental Motors
PHONE		PHONE	
NAME	Lisa Jersild	NAME	Alex Lemishko
ADDRESS	Mobile, Alabama	ADDRESS	Central Region
ORGANIZATION	Continental Motors	ORGANIZATION	NTSB
PHONE		PHONE	
NAME	Mike Council	NAME	
ADDRESS	Mobile, Alabama	ADDRESS	
ORGANIZATION	Continental Motors	ORGANIZATION	
PHONE		PHONE	

EXTERNAL INSPECTION OF ENGINE

The engine was received in a shipping container from the wreckage recovery company which also contained a Hartzell 3 blade propeller from the accident engine. The engine data plate confirmed that the engine received was a CMI model TSIO550C (11B), serial number 802858. The engine and accessories was removed from the shipping container and placed on an engine stand. Even though the engine had been steam cleaned by the recovery crew to remove mud and vegetative debris from the engine and accessories, dried mud was present in cylinder cooling fins and throughout the engine components and accessories.

The cross-flow style induction components were impact damaged. The right and left aftercoolers were not received. The right forward induction tube assembly was impact damaged and the left forward induction tube separated.

The forward mounted, belt driven alternator (alternator # 2) received impact damage. The starter motor separated outboard of the attach flange.

The right magneto separated at its mount but remained attached to its ignition harness. The left magneto remained intact. When removed and tested, neither magneto would produce spark. Both left and right magnetos were removed and allowed to dry in a low temperature oven. After drying, each magneto produced spark across a 7mm gap.

The crankshaft propeller flange and crankshaft (just forward of propeller seal area) exhibited visible cracks. Impact damage to the crankshaft was measured at: end-play .008 ", deflection .145" and run out .080"

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The engine driven pump had been previously removed and examined. A statement in the CMI ASI's field notes indicated that the fuel pump was removed at the recovery examination and that the drive coupling was intact. When the fuel pump was manually rotated at the recovery site, the pump rotated smoothly and fuel was expelled. However, when the engine driven fuel pump was received for analytical inspection, manual rotation of the fuel pump was not possible. The pump was disassembled. Steel parts had corroded in the time since previously inspected due to water contamination. Further statements in the CMI ASI's field notes indicate that the engine was manually rotated and thumb compression was achieved at each cylinder.

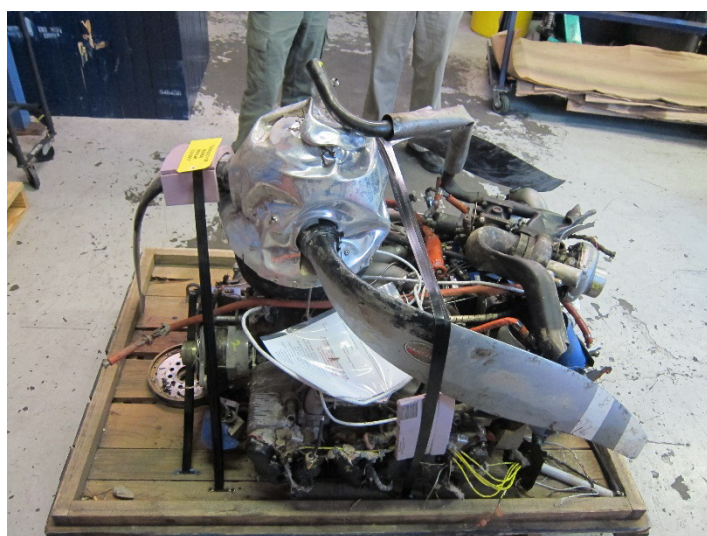
All six cylinders remained attached at their respective mounts. Cylinder # 1 exhibited a large crack between the induction port and the intake rocker box cover. Cooling fins were impact damaged. The rocker box covers exhibited minor impact damage but remained attached to each cylinder.

All four engine mounts were broken. A crack was discovered in the crankcase while replacing the engine mount located under cylinder # 2. The oil sump rail (flange) was impact damaged.

The oil sump was impact damaged and breached. The quick-drain valve boss was broken. The oil cooler remained attached but the mounting base was damaged. The oil temperature control had separated and was not returned, its attach boss broken.

The propeller governor was removed and inspected. The pitch change control arm had separated. When the governor shaft was manually rotated, the governor rotated smoothly and the pump was heard to gurgle.

The Hartzell propeller and both right and left turbochargers were examined by the Hartzell ASI. A separate report will be included in the CMI accident file.



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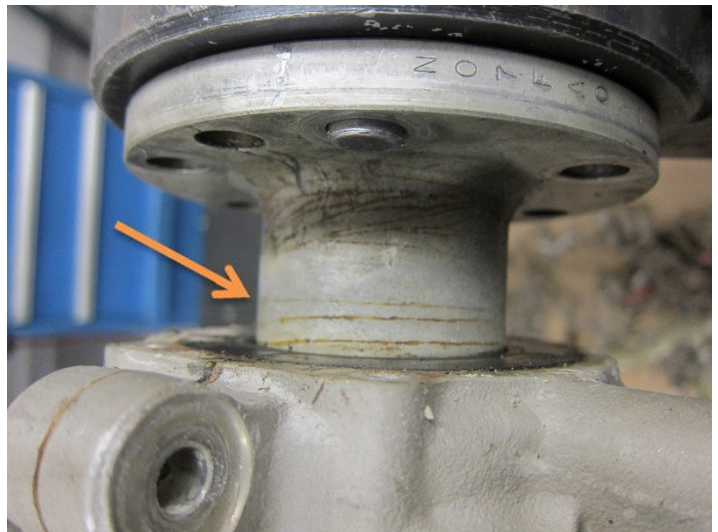
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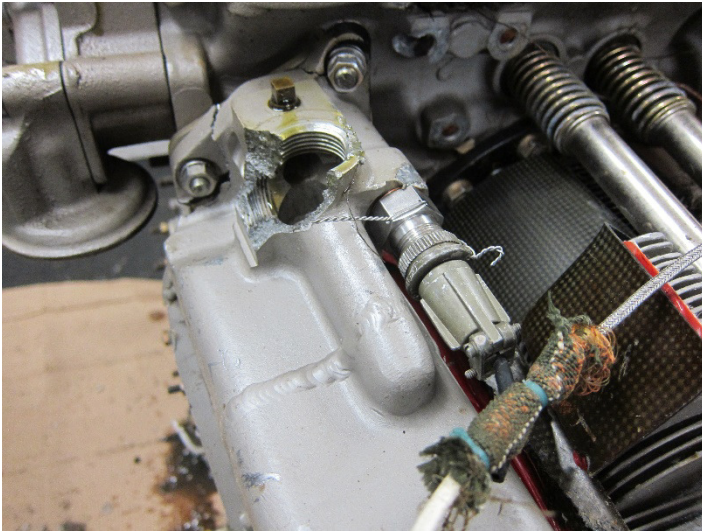
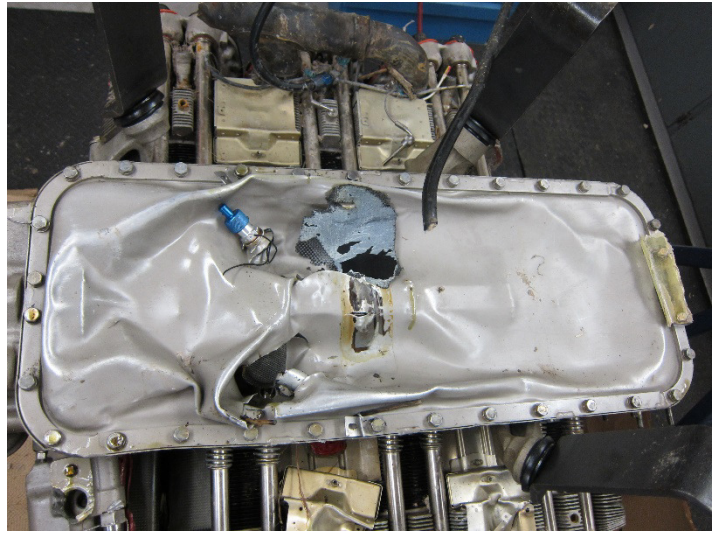
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INTERNAL INSPECTION OF ENGINE

Rocker covers were removed from each cylinder. All valve springs and rocker arms were intact. All sparkplugs were removed and inspected. All sparkplugs were dark in color and several contained mud and contaminated water. All sparkplugs were "fine wire" except the top sparkplug from cylinder # 5 which was a "massive electrode" type.

The oil pump was removed and disassembled. The gears and pump cavity exhibited normal wear signatures. The oil pressure relief valve assembly was intact.

The crankcase assembly was disassembled to reveal the crankshaft, camshaft and accessory gears. Crankshaft counterweight assemblies and connecting rods were intact. Internal engine timing was confirmed. When the oil sump was removed, a large amount of mud was present.

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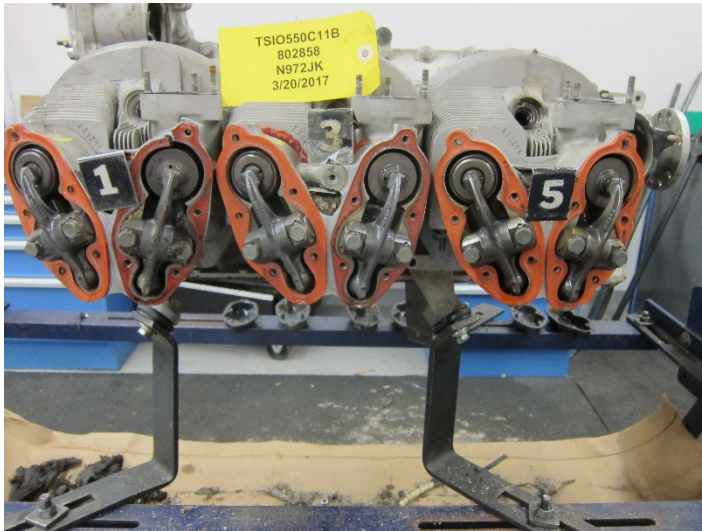
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All cylinders were removed and inspected. Intake and exhaust valves were intact and exhibited normal combustion signatures. Cylinders were contaminated with water and mud. Piston and rings were intact and exhibited normal combustion signatures and wear patterns. Valve lifters exhibited spalling which may have been influenced by mud and water contamination.

Main and connecting rod bearings exhibited normal wear patterns.



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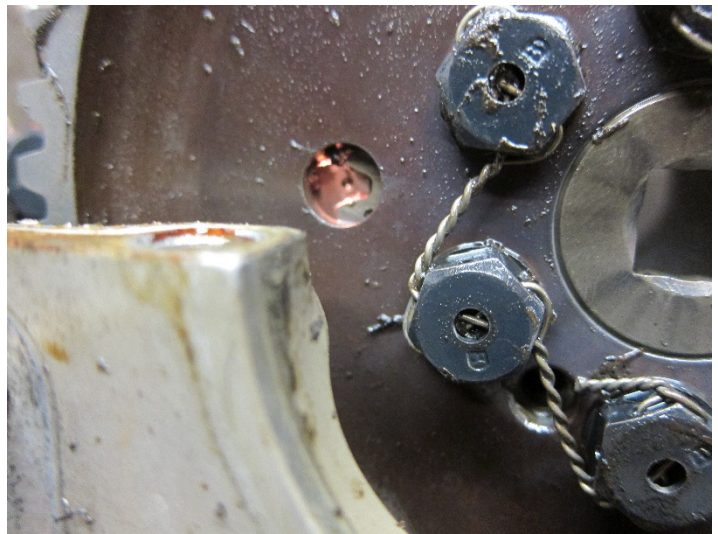
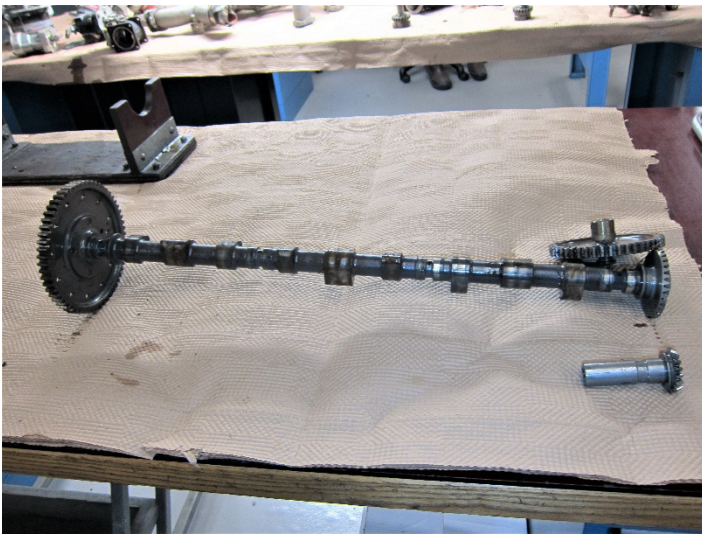
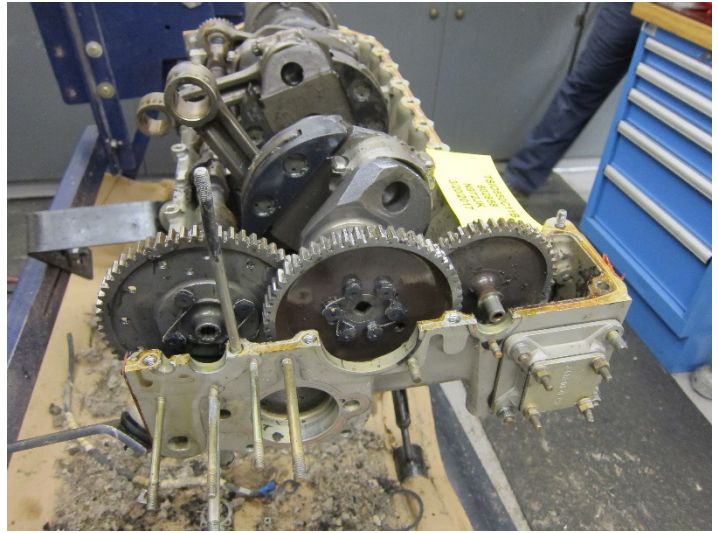
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