



Continental Motors

ENGINE EXAMINATION REPORT

ENGINE MODEL	O300D (6)
ENGINE SERIAL NUMBER	27605-D2D
AIRCRAFT MAKE & MODEL	Cessna 172A
AIRCRAFT SERIAL NUMBER	46843
AIRCRAFT REGISTRATION	N7243T
CMI FILE NUMBER	17-076

NAME	SIGNATURE	DATE
Mike Council		10-3-2017

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GENERAL INFORMATION

EXAMINATION		ACCIDENT DATA	
DATE	8-31-2017	NTSB ACCIDENT #	WPR17LA169
FACILITY	Enumclaw-Paul Petite Memorial Airport	NTSB INVESTIGATOR	Maja Smith, IIC
ADDRESS	[REDACTED] Enumclaw, WA 98022	FAA INVESTIGATOR	Rod Ziegler, Seattle FSDO Inspector
		ACCIDENT DATE	7-28-2017
		ACCIDENT LOCATION	Enumclaw, WA

ENGINE INFORMATION

ENGINE POSITION	Single
TOTAL TIME	3489.68 calculated from logbook excerpts
TIME SOH	1857.68 calculated (535.67 since top overhaul-calculated)
TYPE & TIME SLI	3.25 since last 100 hour/annual inspection dated 6-18-2017
BUILD DATE	Undetermined-original shipping date from CMI 11-9-1962
IN SERVICE DATE	11-1-1987 installation on the accident airplane with total time undetermined

Significant logbook information:

DATE	TOTAL TIME IN SERVICE	REFERENCE OF MAJOR REPAIRS AND MAJOR ALTERATIONS TO FAA FORM ACA-337 BY DATE, OR TO THE WORK ORDER BY NUMBER AND THE APPROVING AGENCY.
2017		
06/15	769.2	PERFORMED COMPRESSION TEST PER CONTINENTAL ENGINE MANUAL. #1 74/80, #2 74/80, #3 72/80, #4 70/80, #5 74/80, #6 74/80. CHECKED IGNITION TIMING. [REDACTED] AP [REDACTED]

DATE	TOTAL TIME IN SERVICE	REFERENCE OF MAJOR REPAIRS AND MAJOR ALTERATIONS TO FAA FORM ACA-337 BY DATE, OR TO THE WORK ORDER BY NUMBER AND THE APPROVING AGENCY.
2017		
JUNE 18	769.26	tach. I CERTIFY THAT THIS ENGINE HAS BEEN INSPECTED IN AN ANNUAL INSPECTION AND FOUND TO BE IN AIRWORTHY CONDITION. [REDACTED] IA

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Report Summary:	Search Code(s):
Examination of the engine was performed by the CMI Investigator under supervision of the FAA FSDO Inspector. The inspection of this engine did not reveal any pre-impact anomalies that would have prevented its ability to produce rated horsepower.	
Disposition of engine following exam: The engine remained in the owner/operators T-hanger located at Enumclaw-Paul Petite Memorial Airport, Enumclaw, WA.	

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NAME	Mike Council	NAME	Rod Ziegler,
ADDRESS	██████████ Mobile, Alabama	ADDRESS	██████████ Renton, WA 98057
ORGANIZATION	Continental Motors	ORGANIZATION	FAA PMI - A/W Inspector, Seattle FSDO
PHONE	██████████	PHONE	██████████

EXTERNAL INSPECTION OF ENGINE

The two-blade metal, fixed pitch propeller separated from the engine at the crankshaft propeller flange. The propeller flange remained attached to the propeller with what appeared to be improper hardware. The propeller mounting bolt lengths were too short. Threads must protrude two-three threads outboard of the nut in order for the nylon locking feature to operate correctly. The propeller mounting bolt threads were flush with the outer portion of the self-locking nuts with no threads protruding. The fracture surface of the exposed portion of the damaged crankshaft exhibited 45-degree shear lips and diagonal ladder cracks across the radius.

The engine oil sump was impact damaged allowing most of the engine oil to escape. The carburetor separated and was secured to the engine only by the control cables and fuel hoses. The carburetor mounting flange had separated due to impact forces. The engine accessory case was damaged at the aftermarket oil filter adapter mount. A red-colored gasket protruded from the oil filter adapter at the damaged mount. The instrument dry-air pump remained attached to the accessory case mount but the inlet and outlet fittings separated. The exhaust components remained attached and the muffler tailpipes received impact damage.

NOTE: THE CRANKSHAFT WAS BROKEN OUTBOARD OF THE FORWARD CRANKCASE. IN ORDER TO ROTATE THE ENGINE MANUALLY, THE STARTER MOTOR WAS REMOVED AND A LARGE PRYBAR WAS USED TO MANUALLY ROTATE THE ENGINE STARTER ADAPTER DRIVE. ONLY PARTIAL ROTATION WAS ACHIEVED.

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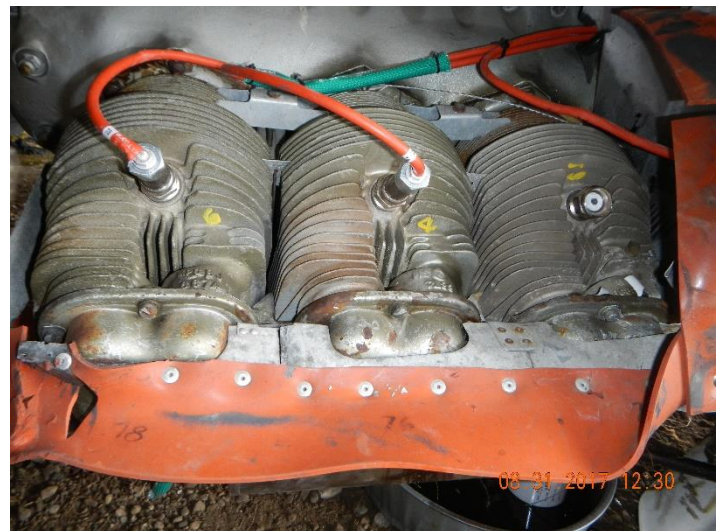
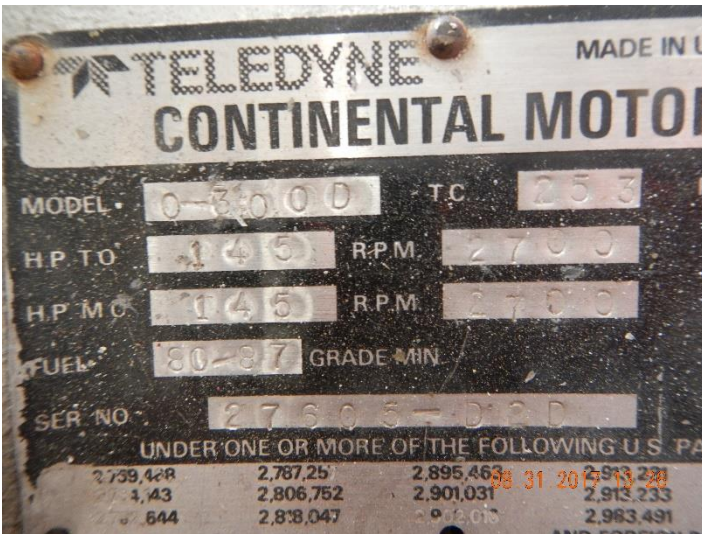
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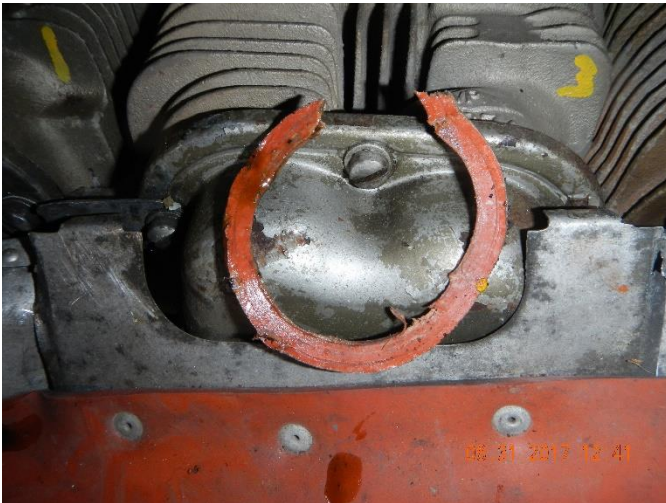
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ENGINE AND COMPONENT EXAMINATION

EXHAUST SYSTEM

Condition: The left and right muffler remained attached. The tailpipes received impact damage.



INDUCTION SYSTEM

Condition: The induction system remained intact except the carburetor mounting flange. See *Carburetor*. The induction filter was contaminated with dirt and grass.

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IGNITION SYSTEM

LEFT MAGNETO	Manufacturer: TCM overhauled by Kelly Aerospace	P/N: 10-51365-39	S/N: E04172
Condition:	The left magneto exhibited no damage.		



RIGHT MAGNETO	Manufacturer: TCM overhauled by Electrosystems	P/N: 10-51365-39	S/N: 3060601
Condition:	The right magneto exhibited no damage.		



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IGNITION HARNESS

Manufacturer: Kelly Aerospace

P/N: Undetermined

S/N: Undetermined

Condition: The ignition harness exhibited impact damage at sparkplug connections on cylinders one, three and five.



SPARK PLUGS

Manufacturer: Tempest

P/N: UREM40E

Condition: The sparkplugs appeared to be new and were intact with the exception of the top sparkplug removed from cylinder # 2. When compared to a Champion "Check-A-Plug" chart, the conditions were *normal*. All four sparkplugs exhibited a slightly darker than normal color and exhibited an odor consistent with auto fuel.



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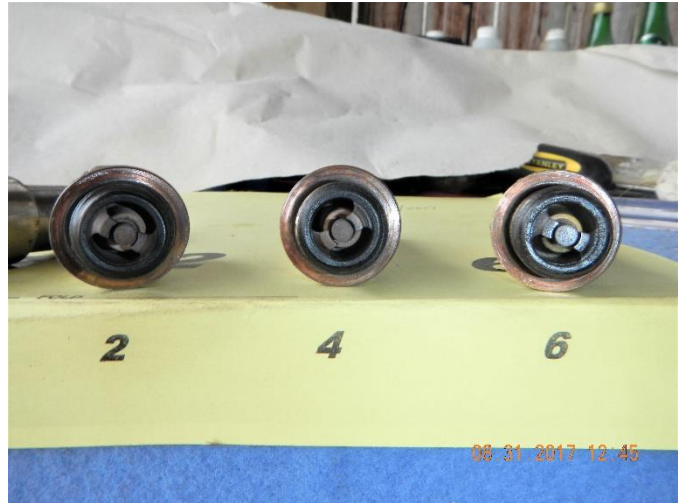
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FUEL SYSTEM

FUEL PRIMER	Manufacturer: Cessna	P/N: Undetermined	S/N: Undetermined
Condition:	This fuel primer is located with other engine controls in the lower center of the cabin instrument panel. The primer was found in an unlocked position. See red arrow.		



CARBURETOR	Manufacturer: Marvel Schebler/Precision	P/N: 10-4895-1	S/N: 545642
Condition:	The carburetor was undamaged with the exception of the mounting flange which partially separated. The throttle plate was in the wide-open position as was the cabin control. Throttle and mixture arms and cables remained secured. Control cable continuity was confirmed from the instrument panel to the carburetor. The carburetor exhibited an odor consistent with auto fuel.		



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LUBRICATION SYSTEM

OIL SUMP

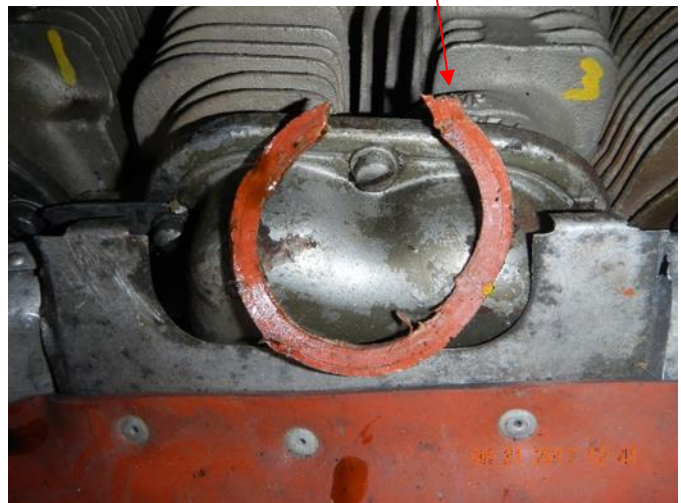
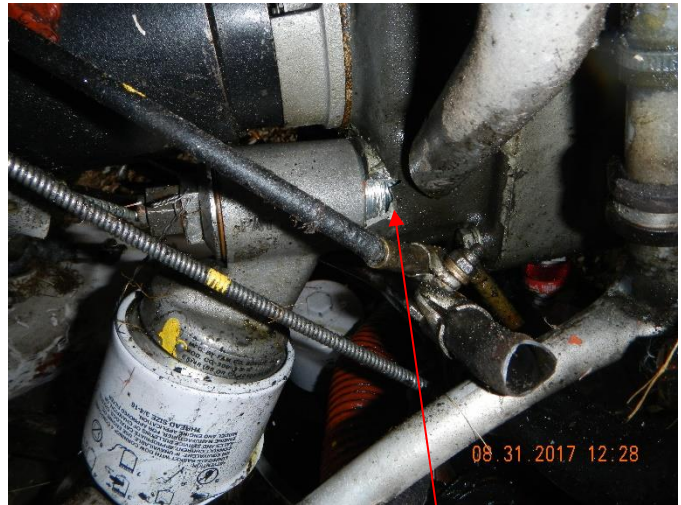
Condition: The oil sump was impact damaged allowing most of the engine oil to escape.

OIL FILTER

Manufacturer: Champion

P/N: CH48108-1

Condition: The aftermarket spin-on-oil filter and oil filter adapter received impact damage. A red silicone type gasket separated from the oil filter adapter mount.



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CYLINDERS

Condition: All cylinders remained attached to its respective base and no impact damage was noted. A lighted electronic borescope inspection was performed. All intake and exhaust valves were examined and found intact. Normal to dark combustion signatures were noted on valve faces and piston domes. Rocker covers were removed to observe rocker arm movement



ROCKER ARMS AND SHAFTS

Condition: All rocker arms and shafts were intact and movement was noted when the engine was partially rotated (manually).



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CRANKSHAFT ASSEMBLY

CRANKSHAFT	Forging Number: Undetermined	S/N: Undetermined	Heat code: Undetermined
Condition:	The crankshaft separated at the propeller flange. The break exhibited 45 degree shear lips and ladder cracks around the diameter of the shaft.		



CAMSHAFT

CAMSHAFT	P/N: Undetermined	S/N: Undetermined
Condition:	Camshaft continuity was confirmed by rotating (partial rotation only) the engine manually and noting the valve train rocker arms in motion.	

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ACCESSORIES

STARTER	Manufacturer: Delco Remy	M/N: 1109514	S/N: 304
Condition:	No damage was noted.		



VACUUM PUMP	Manufacturer: Airborne	P/N: Undetermined	S/N: 5AC-3757
Condition:	The vacuum pump remained intact and attached. The data plate was worn and the model number obscured. The input and output fittings separated.		



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PROPELLER

PROPELLER	Manufacturer: McCauley	M/N: 1C172EM7654	S/N: 70321
Blade 1 S/N:	Undetermined		
Blade 2 S/N:	Undetermined		

