



Continental Motors

ENGINE RUN REPORT

ENGINE MODEL	IO550D-13B
ENGINE SERIAL NUMBER	1032113
AIRCRAFT MAKE & MODEL	Cessna 182Q
AIRCRAFT SERIAL NUMBER	18267238
AIRCRAFT REGISTRATION	N97878
FILE NUMBER	16-238

NAME	SIGNATURE	DATE
Phillip Grice		01/10/2017

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GENERAL INFORMATION			
EXAMINATION		ACCIDENT DATA	
DATE	1-10-2017	NTSB ACCIDENT #	CEN17LA025
FACILITY	Mobile Alabama	NTSB INVESTIGATOR	Aaron Sauer
ADDRESS	2039 Broad Street Mobile, Alabama 36615	FAA INVESTIGATOR	
		ACCIDENT DATE	10-23-2016
		ACCIDENT LOCATION	Buffalo, WY
ENGINE INFORMATION			
ENGINE POSITION	Single		
TOTAL TIME	44.7 since factory rebuilt		
TIME SOH	NA		
TYPE & TIME SLI	44.7 hours since last annual inspection		
BUILD DATE	3-1-2016		
IN SERVICE DATE	7-9-2016		

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Significant logbook information:

Date	Total Time		Time Since Last Overhaul		<i>Engine Service and Maintenance Record</i>
	Hours	Min	Hours	Min	
					Record maintenance actions including engine part removal and installation and compliance with inspections, Airworthiness Directives, Special Inspections, Modifications and Service Bulletins

TWELVE STONE AVIATION LLC

802 AIRPORT RD HANGAR 5

SPRINGDALE, AR 72764

479-799-8065

N97878

SN. 1032113

ACTT: 3441.8

TACH: 000.0

SMOH: 000.0

07/09/2016

INSTALLED NEW ENGINE, MN. RD-550-D13, SN. 1032113 WITH NEW MCCAULEY PROPELLER D3A34C101-C, SN.160027 WITH NEW SPINNER ASSEMBLY D-7515 ON C182Q, N97878, SN. 18267238PER STC SA3825SW, GENERAL AVIATION MODIFICATIONS GAMUJECTORS IN ACCORDANCE WITH STC 09217SC, SEE 337 THIS DATE.WEIGHT AND BALANCE REVISED. POH /OWNER'S MANUAL REVISED WITH APPLICABLE FLIGHT MANUAL SUPPLEMENTS. INSTALLED OVERHAULED PROP GOVERNOR AND ALTERNATOR. INSTALLED NEW R/H EXHAUST STACK, REIF TURBO XP ENGINE HEATER.SET MAG TIMING, CLEANED PAINTED AND RESEALED ENGINE BAFFLING. INSTALLED NEW CH48108 OIL FILTER AND SERVICED WITH PHILLIPS 20W/50 TYPE M OIL.GROUND RUN ENGINE. SET FUEL AND IDLE MIXTURE. NO LEAKS NOTED. RETURN TO SERVICE.

KEVIN S DAV

EDWARDS



1691 Aviation Place

Billings, MT 59105

Certificated Repair Station HSRR811E

Date: 9/28/2016; Aircraft: N97878; Type: CESSNA 182; S/N: 18267238; Tach: 40.00; Total Time:
Engine: Continental IO-550D-13, Serial Number 1032113

ENGINE LOG

1. Drained oil and removed filter from engine. Collected oil sample and sent for analysis. Inspected oil filter for contamination. None noted. Installed new oil filter and safetied. Serviced engine with 11 quarts Aeroshell 15W50 oil. Secured oil filler cap. Washed down engine. Run-up/leak check satisfactory.
2. Performed a compression check on all cylinders. Differential Compression Test results: 1:69 2:71 3:73 4:70 5:70 6:70/80 PSI.

Pertinent details of work accomplished on this aircraft are on file at this agency under Work Order 20017.

The maintenance identified above has been inspected and the aircraft is approved for Return To Service.

For Edwards Jet Center:

Signed: _____

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Report Summary:	Search Code(s):	15-12-68
The engine did not exhibit any pre-impact anomalies that would have prevented the engine from producing rated power.		
Disposition of engine following exam: The engine was released by the NTSB IIC and the engine was returned to Beegles Aircraft per shipper request # AD00951		

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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	Mike Council
ADDRESS	Mobile Alabama	ADDRESS	Mobile, Alabama
ORGANIZATION	Continental Motors	ORGANIZATION	Continental Motors
PHONE	██████████	PHONE	██████████
NAME	Kurt Gibson	NAME	Aaron Sauer
ADDRESS	Mobile, Alabama	ADDRESS	Central Region
ORGANIZATION	Continental Motors	ORGANIZATION	NTSB
PHONE	██████████	PHONE	██████████

EXTERNAL INSPECTION OF ENGINE



ENGINE RUN REPORT

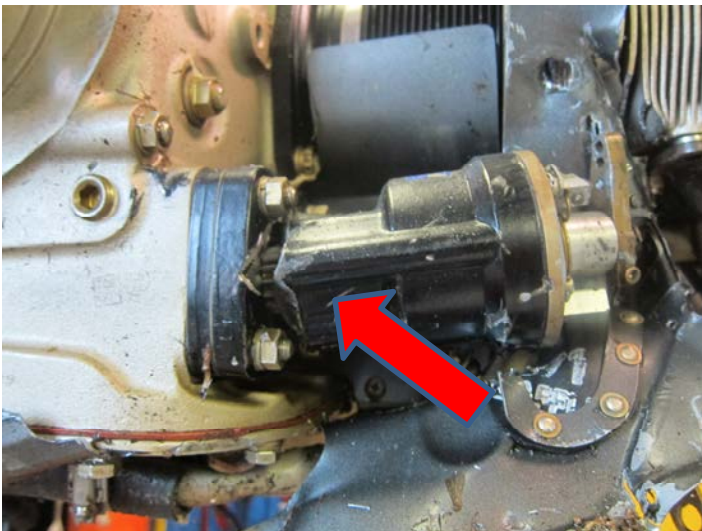
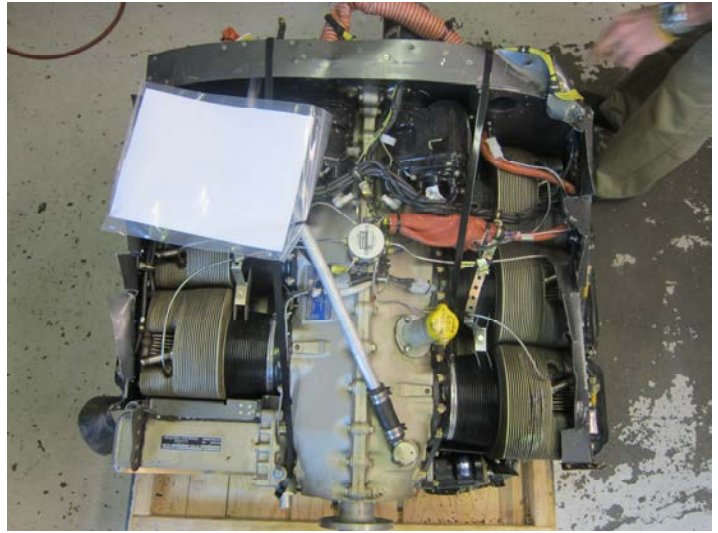
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ENGINE PREPARATION PRIOR TO RUN

There were a number of airframe related items removed in preparation for operation on the CMI test bed.

Items removed:

Various portions of engine cooling baffles

Instrument air pump

Damaged propeller governor

The following substitute or repaired parts were required for engine operation:

Starter adapter (After first start)

Cylinder # 2 rocker box cover

Cylinder # 6 exhaust push rod housing and push rod

Cylinder # 1 intake tube elbow

Right forward and rear engine mounts

Engine oil sump

Balance tube assembly

Right Rear intake manifold elbow

The cylinders were bore-scoped and the following was observed:

All valves were intact and exhibited normal combustion signatures

The magneto-to-engine timing was checked and with the following results:

Magneto-to-Engine Timing (Specified):	Left Magneto:	Right Magneto:
22°BTDC	21°BTDC	21°BTDC

A cylinder leakage test was performed prior to the test run in accordance with the latest revision of CMI Service Bulletin SB03-3 with the engine at room temperature with the following results (master orifice reading – 43 PSI):

PSI):

Cylinder #1 - 37/80 PSI (exhaust valve)

Cylinder #2 - 75/80 PSI (rings)

Cylinder #3 - 9/80 PSI (exhaust valve)

Cylinder #4 - 75/80 PSI (rings)

Cylinder #5 - 16/80 PSI (exhaust valve)

Cylinder #6 - 75/80 PSI (rings)

(*) – Leakage Source

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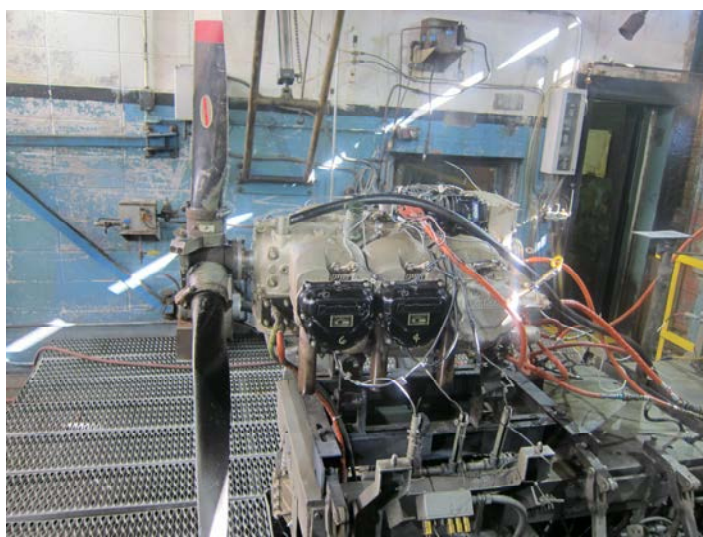
The engine was not disassembled prior to the engine run. The crankshaft end-play measured 0.016" and the run-out was 0.003".

The engine was then prepared for operation by installing the appropriate thermocouples, pressure lines and test pads for monitoring purposes. The engine was then moved to CMI test cell number 43 and mounted for operation. The engine was fitted with a test club propeller for the IO550D engine model.

DESCRIPTION OF RUN

The engine experienced a normal start on the first attempt without hesitation or stumbling in observed RPM. The engine run was interrupted in order to adjust the idle speed. When a restart was attempted, the starter adapter failed. The starter adapter was removed and replaced with a slave starter adapter. The original starter motor was reinstalled and the engine test proceeded normally. The engine RPM was advanced in steps for warm-up in preparation for full power operation. The engine throttle was advanced to 1200 RPM and held for five (5) minutes to stabilize. The engine throttle was advanced to 1600 RPM and held for five (5) minutes to stabilize. The engine throttle was advanced to 2450 RPM and held for five (5) minutes to stabilize. The engine throttle was rapidly advanced from idle to full throttle five times where it performed normally without any hesitation, stumbling or interruption in power.

Throughout the test phase, the engine accelerated normally without any hesitation, stumbling or interruption in power and demonstrated the ability to produce rated horsepower.



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A cylinder leakage test was performed after the test run in accordance with the latest revision of CMI Service Bulletin SB03-3 with the engine hot with the following results (master orifice reading – 43 PSI):

Cylinder #1 - 65 /80 PSI (exhaust)

Cylinder #2 - 71 /80 PSI (rings)

Cylinder #3 - 74/80 PSI (rings)

Cylinder #4 - 76 /80 PSI (rings)

Cylinder #5 - 71/80 PSI (rings)

Cylinder #6 - 72 /80 PSI (exhaust)

(*) – Leakage Source

ENGINE RUN PARAMETERS

Time		RPM	MP / TDP " Hg	Oil		Fuel				Cell ° F	Cylinder Head Temperature ° F					
Reading	Minutes			PSI	° F	Lbs./Hr.	Nozzle PSI	Pump PSI	Fuel ° F		# 1	# 2	# 3	# 4	# 5	# 6
1	5	1200	13.22/ N/A	48	125	24.26	4.02	15.51	65	70	245	276	218	237	223	184
2	5	1600	15.72/ N/A	44	145	44.68	5.00	19.39	67	71	252	295	232	251	256	210
3	5	2100	21.30/ N/A	40	161	86.83	8.53	26.34	69	72	298	319	304	283	334	256
4	5	2450	24.21/ N/A	32	195	117.56	12.50	32.57	76	73	326	414	335	374	393	295
5	5	F/T 2700	28.62/ N/A	30	213	157.62	26.63	36.25	76	74	342	450	351	402	401	311
6	5	Idle 768	13.72/ N/A	12	181	11.13	4.06	11.94	69	70	281	259	244	245	239	183
Ambient Air Temperature °F		Ambient Air Pressure		Transfer Collar Δ P		Maximum Rated Power Engine Operational Parameters										
67		29.62		IN	OUT	RPM		" Hg MP		Fuel Flow Lbs./Hr.		Metered PSI		Unmetered PSI		
				30	31	2700		N/A		143-155		17.2 - 20.2		32.0 – 36.0		

Notes: Operator – Lisa Jersild. Transfer collar pressure delta measured at full throttle power setting.

Engine Performance Test				
Test RPM	Left Magneto	Left Magneto	Right Magneto	Right Magneto
	RPM	RPM Drop	RPM	RPM Drop
2100	2056	44	2068	32