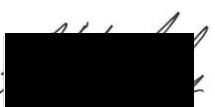




ENGINE RUN REPORT

ENGINE MODEL	O-470-K
ENGINE SERIAL NUMBER	900430-OH
AIRCRAFT MAKE & MODEL	Cessna 180D
AIRCRAFT SERIAL NUMBER	18050914
AIRCRAFT REGISTRATION	N6414X
FILE NUMBER	18-272

NAME	SIGNATURE	DATE
Kurt Gibson		02/27/2020

ENGINE RUN REPORT			
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GENERAL INFORMATION			
EXAMINATION		ACCIDENT DATA	
DATE	02/19/2020	NTSB ACCIDENT #	WPR19LA017
FACILITY	Continental Motors	NTSB INVESTIGATOR	Michael Huhn
ADDRESS	Mobile, Alabama 36615	FAA INVESTIGATOR	Craig Miller
		ACCIDENT DATE	10/30/2018
		ACCIDENT LOCATION	Cottonwood, California
ENGINE INFORMATION			
ENGINE POSITION	Front (single engine)		
TOTAL TIME	2731.6 (the time was calculated using the last maintenance entry)		
TIME SOH	1185 (the time was taken from the last maintenance entry)		
TYPE & TIME SLI	Unknown		
BUILD DATE	01/31/1974		
IN SERVICE DATE	Unknown		
Significant logbook information: The last 100-hour inspection was performed on 09/21/2018 at a tachometer time of 2489.0.			
Report Summary:		Search Code(s):	15-12-68
The engine ran approximately 100 RPM lower than specifications; however, there were no anomalies noted that would have prevented the engine from operating.			
Disposition of engine following exam: The engine was returned to Plain Parts in Pleasant Grove, California			

ENGINE RUN REPORT**FILE NUMBER:**

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ENGINE S/N:

900430-OH

PAGE 3 of 9**INSPECTION WITNESSES**

NAME	Kurt Gibson	NAME	Randy Bryant
ADDRESS	Mobile, Alabama	ADDRESS	Mobile, Alabama
ORGANIZATION	Continental	ORGANIZATION	Continental
PHONE	██████████	PHONE	N/A
NAME	Lisa Jersild	NAME	Phillip Grice
ADDRESS	Mobile, Alabama	ADDRESS	Mobile, Alabama
ORGANIZATION	Continental	ORGANIZATION	Continental
PHONE	N/A	PHONE	██████████
NAME	Mike Huhn	NAME	Henry Soderlund
ADDRESS	Western Pacific Region	ADDRESS	Wichita, Kansas
ORGANIZATION	NTSB	ORGANIZATION	Textron Aviation
PHONE	██████████	PHONE	██████████

ENGINE RUN REPORT			
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INITIAL INSPECTION OF ENGINE

The engine displayed impact damage signatures to the oil sump, exhaust, and balance tube. The rest of the engine was undamaged. The crankcase was intact and there were no holes in the crankcase that would indicate a catastrophic internal engine failure. The propeller flange remained attached to the rest of the crankshaft and was undamaged. All six cylinders remained attached to their cylinder bays and were undamaged. The oil sump displayed impact damage signatures and was removed for replacement; the oil inlet screen was observed and displayed a small amount of sludge in the screen; however, the screen was not blocked. The camshaft was partially visible and displayed normal operating and lubrication signatures.

Both magnetos remained attached to their installation points and were undamaged. The ignition harness was secure to both magnetos as well as to each spark plug; the ignition harness was undamaged. All of the spark plugs remained installed in their cylinders and were undamaged. The top spark plugs were removed and displayed normal operating and wear signatures.

The carburetor had been removed from the engine prior to shipping to the factory. The carburetor was undamaged and there were no visible signs of fuel leaks observed around the carburetor.

The induction system displayed impact damage signatures to the balance tube. There was a small hole noted at the impact damaged area and blue staining surrounded the hole. The induction risers were intact and there were no signs of fuel leaks observed around the risers. The exhaust system displayed impact damage signatures to the risers and to the muffler. The muffler heat exchanger shroud was removed and examined; there were no signs of exhaust leaks observed with any of the exhaust components.



ENGINE RUN REPORT

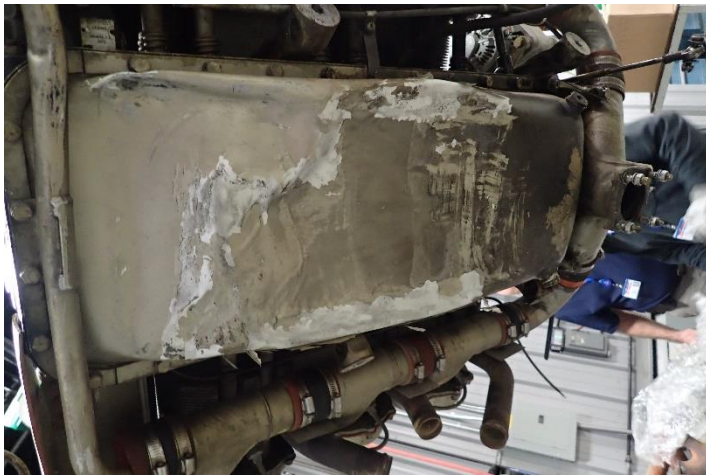
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ENGINE PREPARATION PRIOR TO RUN

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

Items removed:

1. Propeller Governor
2. Vacuum pump
3. Alternator
4. Airframe baffling

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

1. Exhaust
2. Intake balance tube
3. Oil sump
4. Oil filler cap

The cylinders were borescoped and the following was observed:

The cylinder bores, piston faces, and valve heads displayed normal operating and 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	24°BTDC	23.5°BTDC

A cylinder leakage test was performed prior to the test run in accordance with the latest revision of Continental Motors M-0 Maintenance Manual with the engine at room temperature with the following results (master orifice reading – 44 PSI):

Cylinder #1 - 5/80 PSI (exhaust valve)	Cylinder #2 - 20/80 PSI (exhaust valve)
Cylinder #3 - 21/80 PSI (exhaust valve)	Cylinder #4 - 15/80 PSI (exhaust valve)
Cylinder #5 - 5/80 PSI (exhaust valve)	Cylinder #6 - 35/80 PSI (exhaust valve)
(*) – Leakage Source	

The engine was not disassembled prior to the engine run. The crankshaft end-play measured 0.009" the run-out was 0.004", and the deflection was measured to be .002".

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 O-470-K engine model.

ENGINE RUN REPORT

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DESCRIPTION OF RUN AND POST RUN EXAMINATION

The engine experienced a normal start on the first attempt without hesitation or stumbling in observed RPM. 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 advanced to the full open position and held for five (5) minutes to stabilize. It was noted that full-throttle RPM reached approximately 100 RPM lower than the target maximum RPM for an O-470-K engine. 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 operate normally.

After the engine run was completed the carburetor was removed and disassembled. The internal components displayed normal operating signatures and the inlet screen contained a small amount of debris; however, the screen was not blocked.

A cylinder leakage test was performed after the test run in accordance with the latest revision of Continental Motors M-0 Maintenance Manual with the engine hot with the following results (master orifice reading – 44 PSI):

Cylinder #1 - 68/80 PSI

Cylinder #2 - 56/80 PSI (rings/exhaust)

Cylinder #3 - 73/80 PSI

Cylinder #4 - 60/80 PSI (exhaust)

Cylinder #5 - 55/80 PSI (rings)

Cylinder #6 - 55/80 PSI (rings)

(*) – Leakage Source



ENGINE RUN REPORT

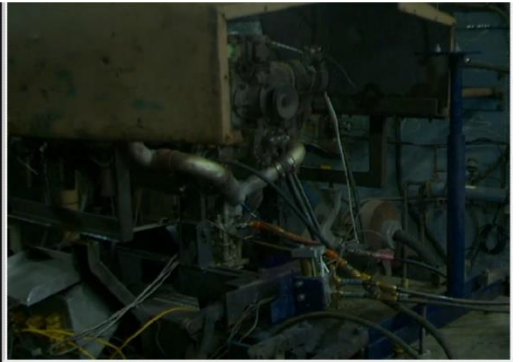
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ENGINE RUN PARAMETERS

Time		RPM	MP / TDP " Hg	Oil		Fuel				Cell °F	Cylinder Head Temperature (CHT)/Exhaust Gas Temperatures (EGT) ° F					
Reading	Minutes			PSI	° F	Lbs/Hr	Nozzle PSI	Pump PSI	Fuel ° F		#1	#2	#3	#4	#5	#6
1	5	1200	14.6/	63	108	35.6	N/A	N/A	63	60	-/ 948	207/ 917	253/ 934	200/ 986	193/ 895	163/ 826
2	5	1600	19.2/	62	143	50.9	N/A	N/A	63	61	-/ 1078	247/ 891	322/ 1016	219/ 1108	236/ 983	182/ 881
3	5	2100	26.2/	56	147	92.3	N/A	N/A	69	63	-/ 1144	282/ 1117	386/ 1174	271/ 1162	296/ 1113	220/ 1088
4	5	2450	27.0/	52	165	121	N/A	N/A	75	69	-/ 1235	367/ 1181	130/ 1240	314/ 1237	319/ 1174	235/ 1130
5	5	F/T 2485	27.4/	50	168	129	N/A	N/A	76	69	-/ 1240	366/ 1187	133/ 1238	314/ 1255	315/ 1131	221/ 1085
6	5	Idle 810	16.4/	42	142	13.1	N/A	N/A	67	58	-/399	217/ 406	63/ 393	196/ 425	209/ 369	147/ 381
7	5		/								/	/	/	/	/	/
Ambient Air Temperature °F		Ambient Air Pressure		Transfer Collar Δ P		Maximum Rated Power Engine Operational Parameters										
63.4		30.06		IN	OUT	RPM		" Hg MP		Fuel Flow Lbs/Hr		Metered PSI		Unmetered PSI		
				64.3	62.0	2600		N/A		138		N/A		N/A		

Notes: Operator – Lisa Jersild. Transfer collar pressure delta measured at full throttle power setting. The #1 and the #3 CHT indications displayed values consistent with faulty CHT probes.

Engine Performance Test				
Test RPM	Left Magneto	Left Magneto	Right Magneto	Right Magneto
	RPM	RPM Drop	RPM	RPM Drop
2108	2010	98	2012	96