




Continental Motors

ENGINE RUN REPORT

ENGINE MODEL	TSIO550K1B
ENGINE SERIAL NUMBER	1010829
AIRCRAFT MAKE & MODEL	Cirrus SR22T
AIRCRAFT SERIAL NUMBER	0884
AIRCRAFT REGISTRATION	N227RR
FILE NUMBER	14-310

NAME	SIGNATURE	DATE
Phillip Grice		May 18,2015

ENGINE RUN REPORT**FILE NUMBER:**

14-310

ENGINE S/N:

1010829

PAGE 2 of 10**GENERAL INFORMATION**

EXAMINATION		ACCIDENT DATA	
DATE	05/19/2015	NTSB ACCIDENT #	ERA15LA062
FACILITY	Continental Motors Inc.	NTSB INVESTIGATOR	Shawn Etcher
ADDRESS	[REDACTED] Mobile, AL [REDACTED]	FAA INVESTIGATOR	Not reported
		ACCIDENT DATE	November 28, 2014
		ACCIDENT LOCATION	Hampton, SC.

ENGINE INFORMATION

ENGINE POSITION	Single Engine
TOTAL TIME	51.7
TIME SOH	N/A
TYPE & TIME SLI	51.7
BUILD DATE	08/15/2014
IN SERVICE DATE	Not reported

Significant logbook information:

The engine had two oil changes, one at 25 hours and one at 50 hours. According to LANDMARK Aviation in Frederick, Maryland the oil filter was opened and examined after each oil change. No metal particles were observed in the filter elements, and the filters were discarded.

Report Summary:

Search Code(s):

15-12-68

There was no impact anomalies noted that would have prevented normal operation or production of rated horsepower.

Disposition of engine following exam:

The engine was returned to Atlanta Air Salvage on shipper number AD00798 on 05-26-2015.

ENGINE RUN REPORT**FILE NUMBER:**

14-310

ENGINE S/N:

1010829

PAGE 3 of 10**INSPECTION WITNESSES**

NAME	Phillip Grice	NAME	Kurt Gibson
ADDRESS	Mobile, AL	ADDRESS	Mobile, AL
ORGANIZATION	Continental Motors	ORGANIZATION	Continental Motors
PHONE	██████████	PHONE	██████████
NAME	Shawn Etcher	NAME	Brad Miller
ADDRESS	Eastern Region	ADDRESS	Duluth, MN
ORGANIZATION	NTSB	ORGANIZATION	Cirrus Aircraft
PHONE	██████████	PHONE	██████████
NAME	Johnny Little	NAME	Greg Eastburn
ADDRESS	Mobile, AL	ADDRESS	Mobile, AL
ORGANIZATION	Continental Motors	ORGANIZATION	Continental Motors
PHONE	██████████	PHONE	██████████

EXTERNAL INSPECTION OF ENGINE

The engine arrived in a crate provided by Continental Motors; after unboxing the engine it was noted that several of the components were removed from the engine by the salvage yard employees. The right sides exhaust risers sustained damage consistent with impact damage to the #5 cylinder exhaust riser. The right intake tube going from the throttle body to the intercooler sustained damage consistent with impact damage. The fuel pump sustained damage consistent with impact damage; the aneroid adjustment screw was slightly bent. According to the investigator that examined the engine at the salvage yard the NTSB requested for the oil pump cover to be removed to examine the oil pump gears; it was determined that it would be necessary to remove the oil pump cover and restring the oil pump with silk thread. There were no anomalies noted with the external inspection of the engine.

ENGINE RUN REPORT

FILE NUMBER:

14-310

ENGINE S/N:

1010829

PAGE 4 of 10



ENGINE RUN REPORT

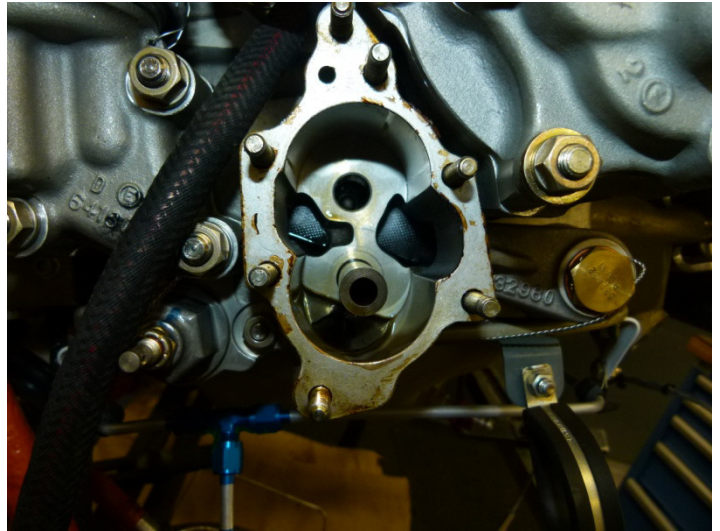
FILE NUMBER:

14-310

ENGINE S/N:

1010829

PAGE 5 of 10



ENGINE RUN REPORT

FILE NUMBER:

14-310

ENGINE S/N:

1010829

PAGE 6 of 10

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. Airframe wiring harness
3. Standby alternator

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

1. Right side exhaust risers
2. Right intake tube connecting the throttle body to the intercooler
3. Oil lines for the turbocharging system
4. Fuel lines and test probes for installation of engine onto test cell.

Note: During the field investigation at the salvage yard the NTSB requested the oil pump cover to be removed to inspect the oil pump. This required the oil pump cover to be restrung prior to the engine run to prevent oil leaks.

The cylinders were borescoped and the following was observed:

All of the cylinders, pistons, and valves displayed normal operating and combustion signatures. There were no anomalies noted during the borescope inspection.

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

Magneto-to-Engine Timing (Specified):	Left Magneto:	Right Magneto:
24°BTDC	25°BTDC	26°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 – 39 PSI):

Cylinder #1 - 65/80 PSI (exhaust valve/rings) Cylinder #2 - 71/80 PSI (exhaust valve/rings)
Cylinder #3 - 67/80 PSI (exhaust valve/rings) Cylinder #4 - 73/80 PSI (exhaust valve/rings)
Cylinder #5 - 50/80 PSI (exhaust valve/rings) Cylinder #6 - 71/80 PSI (exhaust valve/rings)

(*) – Leakage Source

ENGINE RUN REPORT

FILE NUMBER:

14-310

ENGINE S/N:

1010829

PAGE 7 of 10

The engine was not disassembled prior to the engine run. The crankshaft end-play measured 0.011” and the run-out was 0.004”.

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 TSIO-550-K engine model.

DESCRIPTION OF RUN

The engine started on the first attempt without hesitation. The engine RPM was brought to 1000 RPM to warm up the engine to normal operating temperatures; after engine start the oil pressure was noted to be within the normal operating range. The engine was run at 1200 for approximately five minutes to stabilize. The engine throttle was advanced to 1600 RPM and held for approximately five minutes to stabilize. The engine throttle was advanced to 2100 RPM and held for approximately five minutes to stabilize. The engine throttle was advanced to 2450 RPM and held for approximately five minutes to stabilize. The engine throttle was advanced to the full open position and held for approximately five minutes to stabilize. The engine throttle was brought down to idle for approximately five minutes to stabilize.

Throughout the test phase the engine operated normally and there were no anomalies noted that would have prevented normal operation or production of rated horsepower. After the engine oil was warmed to operating temperature the oil pressure stabilized and there were no abnormal changes in oil pressure during engine operation. There were no anomalies noted with the oil pressure during the engine run.



ENGINE RUN REPORT

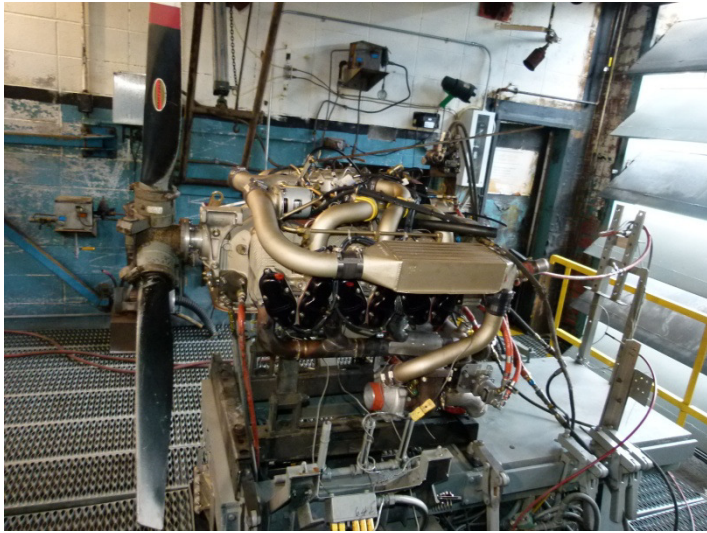
FILE NUMBER:

14-310

ENGINE S/N:

1010829

PAGE 8 of 10



ENGINE RUN REPORT

FILE NUMBER:

14-310

ENGINE S/N:

1010829

PAGE 9 of 10

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 – 39 PSI):

Cylinder #1 - 75/80 PSI (rings)

Cylinder #2 - 77/80 PSI (rings)

Cylinder #3 - 74/80 PSI (rings)

Cylinder #4 - 74/80 PSI (rings)

Cylinder #5 - 75/80 PSI (rings)

Cylinder #6 - 70/80 PSI (rings)

(*) – 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	18.8/30	40	200	Inop	Inop	13.3	77	77	297	254	341	230	248	116
2	5	1600	19.4/30	38	227	Inop	Inop	15.7	78	79	359	298	364	283	285	195
3	5	2100	23/30.7	50	234	Inop	Inop	18.6	83	86	382	303	371	300	322	243
4	5	2450	27/32	58	217	Inop	Inop	21.4	78	76	379	315	374	308	334	265
5	5	F/T 2700	35.4/36.4	60	207	Inop	Inop	25.7	83	86	397	315	357	298	344	270
6	5	Idle	21/30	20	218	Inop	Inop	9.4	76	76	285	350	353	236	202	136
Ambient Air Temperature °F		Ambient Air Pressure		Transfer Collar Δ P		Maximum Rated Power Engine Operational Parameters										
84.0		30.03		IN	OUT	RPM	" Hg MP	Fuel Flow Lbs./Hr.	Metered PSI	Unmetered PSI						
				42	44	2500	37.5	210-220	14.2-14.8	23.6-26.6						

Notes: Operator – Johnny Little, [REDACTED] 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	2096 @ 2124	28	2096 @ 2132	36