



ERA15LA184

Shelter Island, New York

April 13, 2015

Cessna 162 (Skycatcher)

N30283

NTSB ENGINE EXAMINATION REPORT

21 Embedded Photographs

May 21, 2015

PARTICIPANTS IN THE EXAMINATION

**Shawn Etcher
Air Safety Investigator
National Transportation Safety Board
Ashburn, VA**

**Ernest Hall
Air Safety Investigator
Textron Aviation
Wichita, Kansas**

**Phillip Grice
Manager – Analytical Department
Continental Motors Inc. (CMI)
Mobile, Alabama**

HISTORY OF FLIGHT

On April 13, 2015, about 1800 eastern daylight time, a Cessna 162, N30283, was substantially damaged when it impacted terrain immediately after takeoff from Westmoreland Airport (49NY), Shelter Island, New York. The airline transport pilot sustained serious injuries. Visual meteorological conditions prevailed and no flight plan was filed for the personal flight which was conducted under the provisions of Title 14 Code of Federal Regulations Part 91 with an intended destination of Republic Airport (FRG), Farmingdale, New York.

According to eyewitness reports and photographs, the airplane departed to the south on the turf runway, became airborne about midfield, banked to the right, and subsequently impacted the ground. None of the eyewitnesses reported hearing or seeing any abnormalities prior to the impact.

According to a Federal Aviation Administration (FAA) inspector that responded to the accident location, the airplane impacted the ground and came to rest in a sparsely wooded area adjacent to the runway, on its main landing gear. Examination of the airplane revealed flight control continuity to all flight control surfaces from the cockpit and the gust locks were found stowed in the baggage compartment. A smell of aviation fuel was noted at the scene. Photographs provided by the FAA inspector revealed that the fuselage and wings were buckled, the engine was canted in the positive direction and remained attached to the airframe. The composite propeller blades exhibited minimal trailing edge delamination and no chordwise gouges were noted.

ENGINE INFORMATION

Engine Manufacturer: Continental Motors
Engine Model Number: O-200D1B
Engine Serial Number: 1003211
Most Recent Inspection: 08/01/2014 - Annual
Airframe Total Time: 138.9¹ hours
Engine Built: December 2, 2010

INITIAL EXAMINATION AS RECEIVED²

The engine was received crated and sealed. After removal of the crate, the engine was examined and the following items were noted included in the shipping crate; however, had been impact damaged, removed from the engine, and placed in cardboard box for shipment:

- Impact crush damage to carburetor air box
- Impact damage to starter and intake manifold
- Impact crush damage to rocker box on Cylinder Nos. 1 and 3
- The lower right engine mounting leg was impact separated
- Intake ducting for No. 4 Cylinder
- Right magneto ignition leads were partially severed
- Oil sump punctured

¹ As of April 10, 2015 in the maintenance records

² All directions are in reference to as viewed from the pilot seat

The engine was mounted to a portable cart utilizing the remaining three (3) mount legs for further examination and engine run preparation.



DETAILED EXAMINATION

During examination the lower right mounting leg was impact separated. The engine was mounted to the test stand with the remaining three (3) engine mounts. Examination of the rear engine crankcase gears where the starter attaches to the rear accessory gear pad, appeared normal in appearance and no abnormalities were noted. Examination of the carburetor revealed impact crush damage in the vicinity of the intake manifold; operating the fuel arm revealed a blue fluid similar in color to 100LL aviation fuel was observed exiting the carburetor. Examination of the oil sump revealed impact damage to the forward side of the reservoir. The right magneto ignition harness exhibited impact damage and would require repair for engine run.



Photo 10: Starter as Removed from Cardboard Box



Photo 11: Carburetor as Viewed after Removal from Cardboard Box

Engine

The engine crankcase exhibited minimal damage on the right side of the engine; however, the damage was determined to be minor and not restrictive to an engine run. The crankshaft had a Serial No. N19IA054 and the crankcase Serial No. S10KA022. The cylinders Serial Nos. were:

Cylinder 1: AC10HB121

Cylinder 2: AC10JA709

Cylinder 3: AC10JA651

Cylinder 4: AC10JA683

The oil cooler was manufactured by Scott Warner South Wind Corp., Part No. 10578R, Serial No.436. It remained attached to the baffling.

No defects or abnormalities were noted that would preclude an engine test run.

Starter Motor

Skytec, Model No. C12ST2/S, Serial Number 2C-411028. The unit was impact separated from the engine and placed in a cardboard box and shipped with the engine crate.



Photo 12: Starter Motor as Viewed

Alternator

Was manufactured by Plane Power, Part No. C14-50, Serial Number C14-101406. The unit remained attached to the rear section of the engine.



Photo 13: Generator as Viewed Mounted on Engine

Carburetor

The carburetor was manufactured by Volare, Model No. MA-3SPA, and Serial No. VN300802, Part No. 10-4894-1. The unit was impact separated and was located in a cardboard box shipped with the engine.



Photo 14: Carburetor as Viewed Following Removal from a Cardboard box



Photo 15: Carburetor Venturi

Magnetos

The magnetos remained in place on the engine and securely mounted to the rear accessory pad.

Left Magneto

The left magneto was a Champion Aerospace, Model No. 4301, Serial No. 09070230. The magneto was found timed at 24°. Optimal timing was 24°.

Right Magneto

The right magneto was a Champion Aerospace, Model No. 4301, Serial No. 10101200. The magneto was found timed at 24°. Optimal timing was 24°.



Photo 16: Both Magnetos as Received

Sparkplugs

The sparkplugs were Champion Sparkplugs, Part No. REM37BY. The top sparkplugs were removed to check compression. The top sparkplugs appeared normal in color and like new.



Photo 17: Top Spark Plugs

Compression Test

	Pre-Engine Run	Post Engine Run
Cylinder No. 1	67/80	68/80
Cylinder No. 2	35/80	60/80
Cylinder No. 3	39/80 Exhaust	65/80
Cylinder No. 4	50/80	70/80

Due to the prop flange the end play and run out were unable to be measured.

ENGINE RUN

The engine was mounted in a test stand and fitted with a test cell propeller. The oil reservoir was replenished with 5 quarts of oil. The engine was started and the oil pressure was noted as 40 psi. The engine run began.

The engine was idled and no hesitations were noted. The magneto drop was within the normal range. The engine was accelerated and decelerated three (3) times with no hesitation noted. The engine was shutdown, propeller and test cell equipment was removed from the test cell to perform the hot compression checks. The engine operated at various power settings, as indicated in the engine run report in Appendix A, and no abnormalities, hesitations, or malfunctions were noted.



Photo 18: Right Side of Engine on Test Stand



Photo 19: Front Side of Engine on Test Stand



Photo 20: Left Side of Engine on Test Stand



Photo 21: Aft Side of Engine on Test Stand

FUTURE ACTIVITIES

None are planned at this time for this engine. The engine will be returned to storage at Continental Motors in Mobile, Alabama in preparation for return shipment to A&P Maintenance at the Long Island Airport in Long Island New York as by the Investigator-In-Charge (IIC) in preparation for release by the National Transportation Safety Board IIC.

APPENDIX INDEX

- Appendix A – Engine Run Report

APPENDIX A

Engine Run Report

ENGINE RUN PARAMETERS																
Time		RPM	MP	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	11.4	40	149	Inop	N/A	N/A	82	85	293	277	280	250	N/A	N/A
2	5	1600	16.2	42	165	Inop	N/A	N/A	85	86	307	303	308	290	N/A	N/A
3	5	2100	21.0	44	182	Inop	N/A	N/A	84	85	329	348	349	332	N/A	N/A
4	5	2450	25.9	44	215	Inop	N/A	N/A	83	85	420	412	396	374	N/A	N/A
5	5	F/T 2673	28	46	198	Inop	N/A	N/A	84	86	430	383	415	364	N/A	N/A
6	5	Idle 976	11.3	40	139	Inop	N/A	N/A	79	85	260	233	243	211	N/A	N/A
7	5															
Ambient Air Temperature °F		Ambient Air Pressure		Transfer Collar ΔP		Maximum Rated Power Engine Operational Parameters										
64.3		29.98		IN	OUT	RPM	° Hg MP		Fuel Flow Lbs/Hr	Metered PSI	Unmetered PSI					
				N/A	N/A	2700	N/A		N/A	N/A	N/A					
Notes: Operator - Johnny Little, 30524. 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	2028 @ 2096		68		2044 @ 2100		56									

Template Issue Date: 01/2015