



Continental Motors

ENGINE EXAMINATION REPORT

ENGINE MODEL	TSIO-550-K1B
ENGINE SERIAL NUMBER	1004739
AIRCRAFT MAKE & MODEL	Cirrus SR22T
AIRCRAFT SERIAL NUMBER	0185
AIRCRAFT REGISTRATION	N821SG
FILE NUMBER	17-039

NAME	SIGNATURE	DATE
Nicole L. Charnon		07/17/2017

ENGINE EXAMINATION REPORT**FILE NUMBER:**

17-039

ENGINE S/N:

1004739

PAGE 2 of 41**GENERAL INFORMATION**

EXAMINATION		ACCIDENT DATA	
DATE	07/14-16/2017	NTSB ACCIDENT #	WPR17FA150
FACILITY	Accident Site and Plain Parts	NTSB INVESTIGATOR	Albert Nixon
ADDRESS	Shellville, California and [REDACTED] Pleasant Grove, CA 95668	FAA INVESTIGATOR	Bart Hauger
		ACCIDENT DATE	07/13/2017
		ACCIDENT LOCATION	Shellville, California

ENGINE INFORMATION

ENGINE POSITION	Single-Engine
TOTAL TIME	423.1 hours
TIME SOH	N/A
TYPE & TIME SLI	Unknown
BUILD DATE	06/15/2011
IN SERVICE DATE	Unknown

Significant logbook information:

At the time of this report's writing, the aircraft maintenance records have not been recovered.

Report Summary:

Search Code(s):

15-12-68

The engine sustained impact damage that fractured all of the engine mounts, separated the right magneto, crushed the oil sump, damaged the induction system, and damaged the engine-driven fuel pump and some of the fuel pump fittings. Despite the damage, there were no pre-accident anomalies noted with the core engine components or the engine-related systems. Crankshaft and camshaft continuity was confirmed and borescope inspection of the cylinders revealed no pre-accident signs of operational distress. The ignition system functioned appropriately during the examination and fuel was present in all of the fuel lines from the engine-driven fuel pump to the fuel manifold valve. There were no signs of pre-accident anomalies with the turbocharging system.

Disposition of engine following exam:

The wreckage was retained at the recovery facility by the NTSB investigator-in-charge.

ENGINE EXAMINATION REPORT**FILE NUMBER:**

17-039

ENGINE S/N:

1004739

PAGE 3 of 41**INSPECTION WITNESSES**

NAME	Nicole L. Charnon	NAME	Albert Nixon
ADDRESS	Washington, DC	ADDRESS	Phoenix, AZ
ORGANIZATION	Continental Motors	ORGANIZATION	NTSB – Western Pacific
PHONE		PHONE	
NAME	Brannon Mayer	NAME	Kenneth C. Meyer
ADDRESS	Duluth, MN	ADDRESS	Sacramento, CA
ORGANIZATION	Cirrus Aircraft	ORGANIZATION	FAA FSDO – Sacramento
PHONE		PHONE	
NAME	Rick Beach	NAME	
ADDRESS	Las Vegas, NV	ADDRESS	
ORGANIZATION	Cirrus Owners & Pilots Association	ORGANIZATION	
PHONE		PHONE	

EXTERNAL ENGINE CONDITION

NOTE: The details noted in this report summarize the condition of the engine as found at the accident site and its condition as observed during the follow-on examination.

The engine came to rest in an inverted position adjacent to the cabin area, but askew from the firewall approximately 45 degrees to the right. The engine was separated from the mounts and remained attached to the aircraft via the throttle control cable, electrical wiring, and intertwined lubricating lines. The three-bladed composite propeller remained attached to the crankshaft and two of the blades were separated from the hub and were found near the initial impact area. One of the separated blades displayed leading edge and chord-wise paint erosion. The other separated blade remained relatively undamaged. The blade that remained attached to the hub was displaced forward at the tip and displayed light chord-wise paint erosion at the tip. The propeller spinner was crushed aft around the hub and was slightly displaced toward one side with the tip folded over the hub.

The fuel inlet and vapor return lines were separated from the engine-driven fuel pump and the mixture control cable rod end remained attached to the mixture control lever. The mixture control cable was separated from the rod end and the rod was bent and the lever was deformed. The aneroid bellows housing was fractured and the bellow was distorted and stretched to the side. The low pressure relief valve set screw was bent. The fuel line from the fuel pump to the fuel metering unit remained in place. The throttle control cable remained attached to the throttle control lever. The fuel manifold valve remained in place on the topside of the engine and the injection lines remained intact.

The two intake filters remained attached to the engine via their scat tubing and housing brackets. The overboost valve and associated intake tubing was separated from the induction system. The

ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 4 of 41

intercoolers remained in place on each side of the cylinders. All of the cylinder intake tubes sustained deformation damage.

The oil supply and return lines for the turbocharger bearings remained in place and intact. The right turbocharger inlet was visible and compressor looked undamaged. The compressor was manually manipulated and it rotated freely with no binding noted.

The pressure controller was separated from the firewall but the lines to and from the controller remained intact and in place. The wastegate actuator linkage remained intact and the oil lines to and from the actuator remained in place and intact.

The oil filler cap remained attached to the filler neck. The oil sump drain plug was displaced and the oil sump was breached. The oil sump was displaced up toward the bottom of the engine.

When the engine was righted, it was noted that the right magneto was separated from its mounting pad and its mounting flange was fractured in an area that coincided with the attaching hardware. The ignition harness remained attached to the magnetos, but the leads sustained impact-related pinching and tearing damage.

There were no external pre-accident anomalies noted with the engine or engine-related systems.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 5 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 6 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 7 of 41

ENGINE COMPONENT EXAMINATION

EXHAUST SYSTEM

Condition:

The exhaust tailpipes were flattened, and the right tailpipe was fractured at the flange weld. The left and right v-band couplings remained in place on the tailpipe and turbocharger exhaust flanges. The right side exhaust risers remained intact, though they all sustained deformation damage. The left side exhaust manifold was separated from the #2 cylinder exhaust riser and the left side exhaust risers were deformed. The wastegate remained attached to the exhaust system, but the exhaust manifold was deformed and the wastegate actuator mount was fractured. There were no pre-accident anomalies noted with the system.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 8 of 41

INDUCTION SYSTEM

Condition: The right intake filter was separated from the turbocharger, but it remained attached to the engine via scat tubing. The filter housing was deformed, but there were no pre-accident anomalies or blockages noted. The left intake filter housing was crushed and remained in place around the left turbocharger compressor inlet. No pre-accident anomalies or blockages were noted when it was removed and inspected. The compressor outlets were separated from the tubing that led to the left and right intercoolers. There were no blockages noted in the intercoolers. The left and right intake elbows that led to the throttle body were separated from the engine. The elbow that contained the overboost valve was flattened and found near the initial impact area. There were no obstructions noted in the throttle body. The throttle lever/shaft functioned normally, with no pre-accident anomalies noted. There were no signs of induction leaks on any of the intake tubes and many sustained deformation damage. The upper deck and induction system reference lines remained in place, though some of the fittings sustained deformation or cracking damage during the accident. There were no pre-accident anomalies noted with the induction system.



ENGINE EXAMINATION REPORT

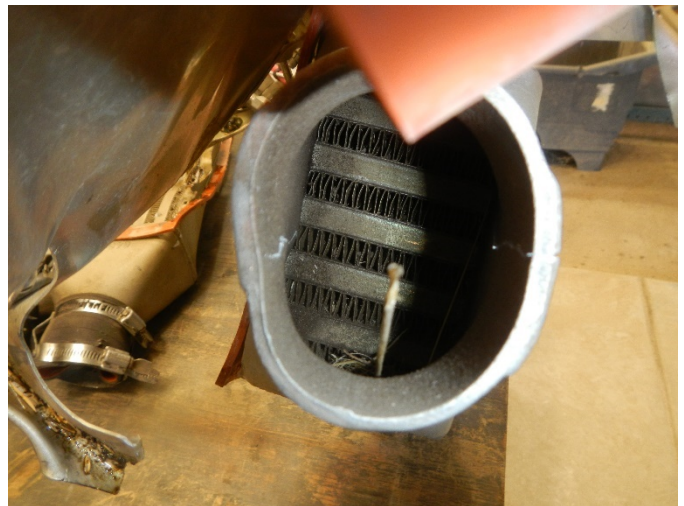
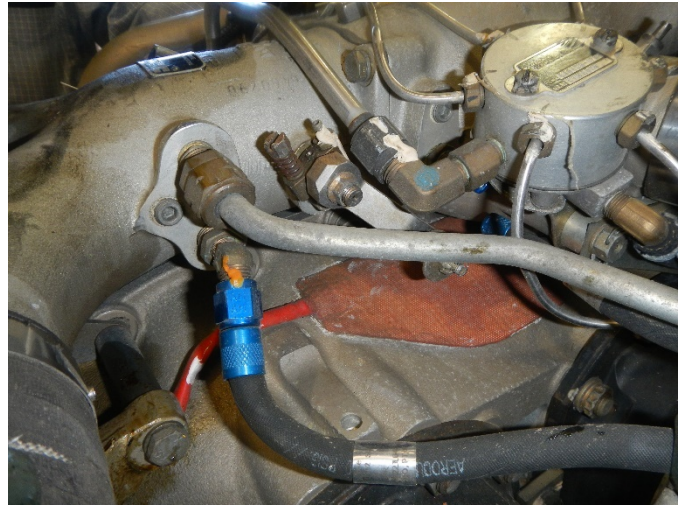
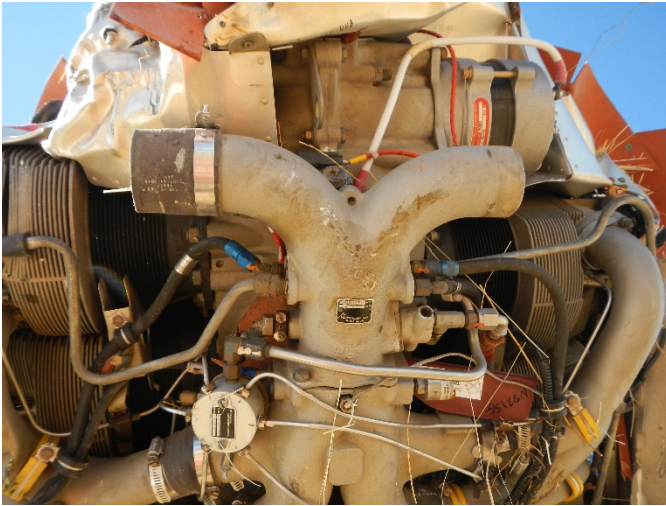
FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 9 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:	17-039	ENGINE S/N:	1004739	PAGE 10 of 41
--------------	--------	-------------	---------	---------------

IGNITION SYSTEM

LEFT MAGNETO	Manufacturer: Continental Motors S6RSC-25P	P/N: BL-500556-101	S/N: D11LA055R
Condition:	The left magneto remained attached to the topside of the crankcase and manual manipulation of the magneto did not result in any slipping on the mounting pad. The ignition harness cap remained secured to the magneto as did the pressurization lines. The pressurization nozzle was removed from the magneto housing so the distributor gear teeth were visible. Rotation of the crankshaft resulted in a coinciding rotation of the distributor gear with an audible snap of the impulse coupling. All of the distributor gear teeth were intact with no pre-accident anomalies noted. The magneto produced a spark at two of the top sparkplugs from two of the intact ignition leads during crankshaft rotation. The damaged ignition harness was removed and the magneto was removed from the engine. Manual rotation of the drive shaft resulted in a spark from each of the distributor towers in firing order.		



ENGINE EXAMINATION REPORT

FILE NUMBER:	17-039	ENGINE S/N:	1004739	PAGE 11 of 41
--------------	--------	-------------	---------	---------------

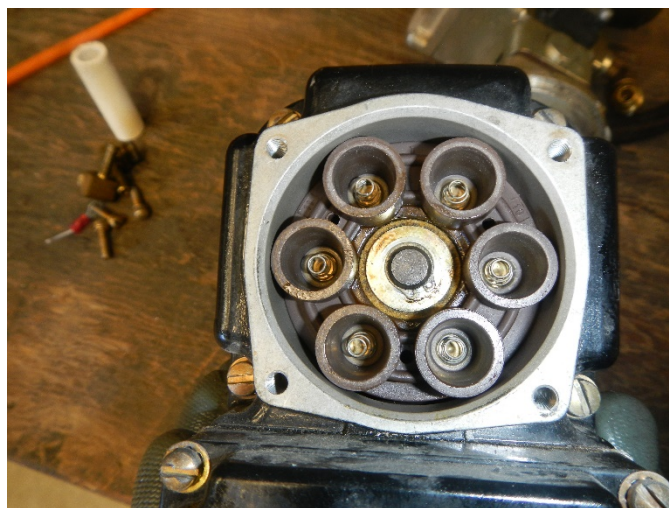
RIGHT MAGNETO

Manufacturer: Continental Motors S6RSC-25P

P/N: BL-500556-101

S/N: D11LA056R

Condition: The right magneto was separated from the engine and the flange was fractured in the area of the mounting hardware. The drive shaft was intact with no pre-accident anomalies noted. The pressurization line was in place. The damaged ignition harness and pressurization nozzle were removed. All of the distributor gear teeth were intact with no signs of pre-accident anomalies. The drive shaft was manually rotated and the magneto produced a spark from each of its distributor towers in firing order.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 12 of 41

IGNITION HARNESS

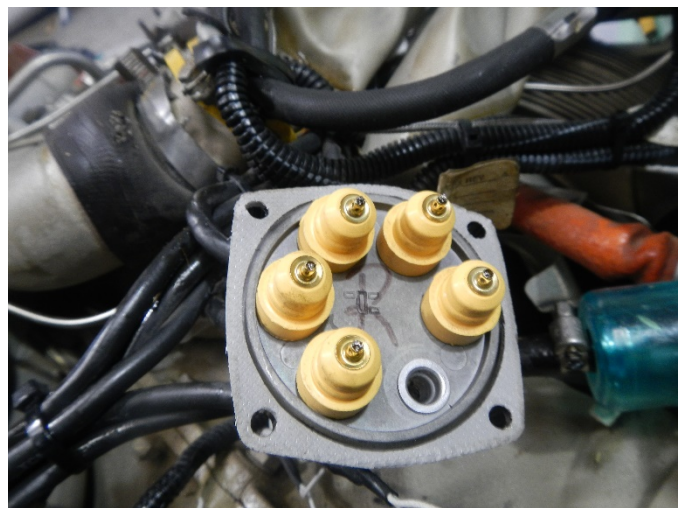
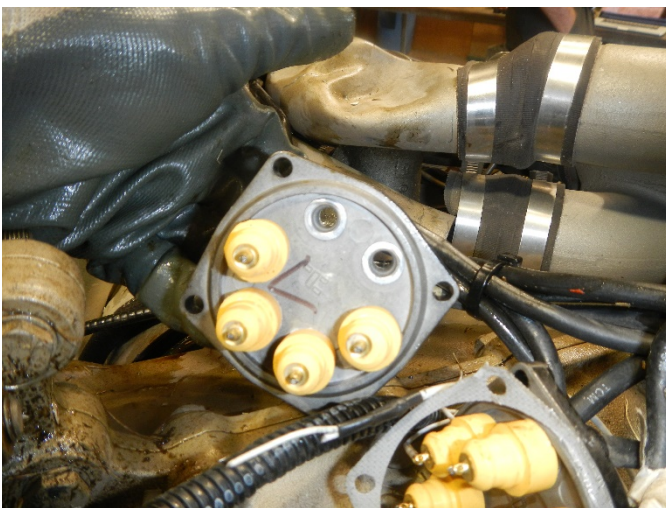
Manufacturer: Continental Motors

P/N: Not Recorded

S/N: Not Recorded

Condition:

The ignition harness caps remained attached to their respective magnetos. Two leads were pulled away from the left magneto cap and one lead was pulled away from the right magneto cap. Many of the leads displayed pinching or tearing damage. The caps were removed from the magnetos and neither displayed any pre-accident anomalies or tracking.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 13 of 41

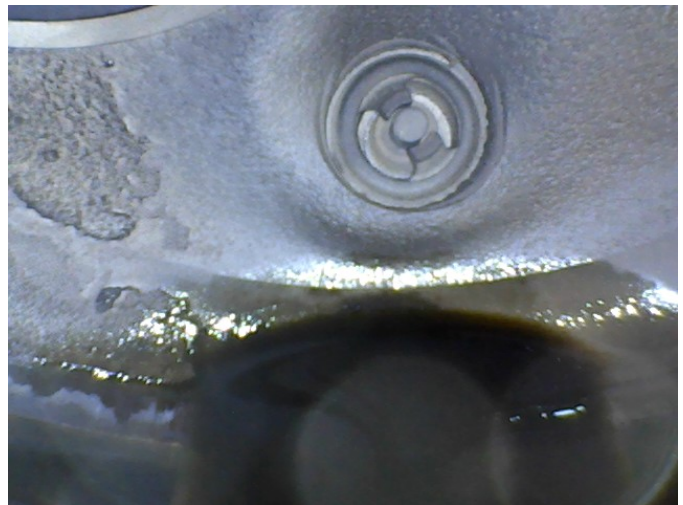
SPARKPLUGS

Manufacturer: Tempest

P/N: URHB32E

Condition:

The sparkplugs remained secured to their respective cylinders and the ignition terminals remained attached to the sparkplugs. Removal of the top sparkplugs' ignition terminals revealed that 4 of the 6 sparkplug insulators were fractured. The top sparkplugs were removed and all displayed normal wear with no sign of carbon or lead fouling; however, the electrode insulators were dark, which was consistent with a slightly rich fuel/air mixture. The two sparkplugs that retained intact insulators were reattached to the left magneto's intact ignition leads. The crankshaft was manually rotated and a spark was observed from each sparkplug during the snap of the impulse coupling. The bottom sparkplugs were documented with lighted borescope and are depicted in the right photo column below. The #6 bottom sparkplug was surrounded by debris that was consistent in color and consistency as separated combustion deposits.



ENGINE EXAMINATION REPORT

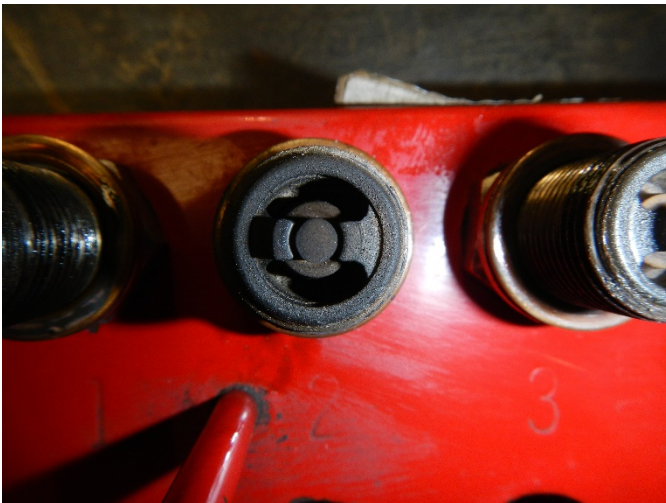
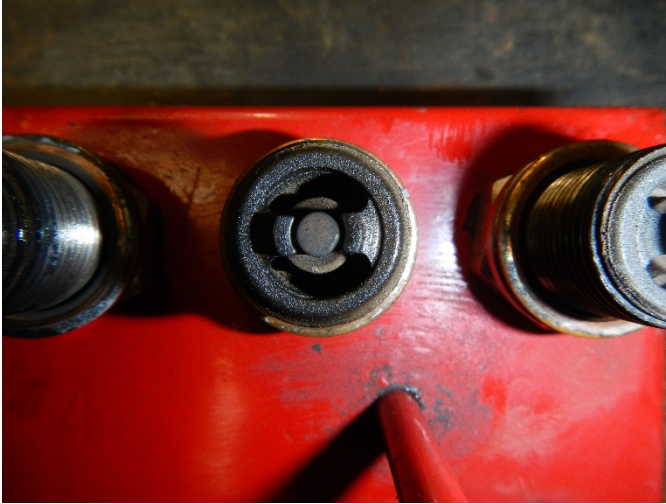
FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 14 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 15 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 16 of 41

FUEL SYSTEM

FUEL PUMP

Manufacturer: Continental Motors

P/N: 649368-60A7

S/N: B11EA185

Condition:

The fuel inlet and vapor return lines were separated from the engine-driven fuel pump and the mixture control cable rod end remained attached to the mixture control lever. The mixture control cable was separated from the rod end and the rod was bent and the lever was deformed. The aneroid bellows housing was fractured and the bellow was distorted and stretched to the side. The low pressure relief valve set screw was bent. The pump was removed from the backside of the engine and fuel consistent in color and odor as 100LL AVGAS poured from the fittings. The drive coupling was intact and manual manipulation of the coupling resulted in rotation of the drive shaft with a sucking sound emanating from the pump fittings. The pump was disassembled and the vanes were intact with no pre-accident anomalies noted. The pump was clean with no signs of contamination.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 17 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 18 of 41

THROTTLE BODY METERING UNIT

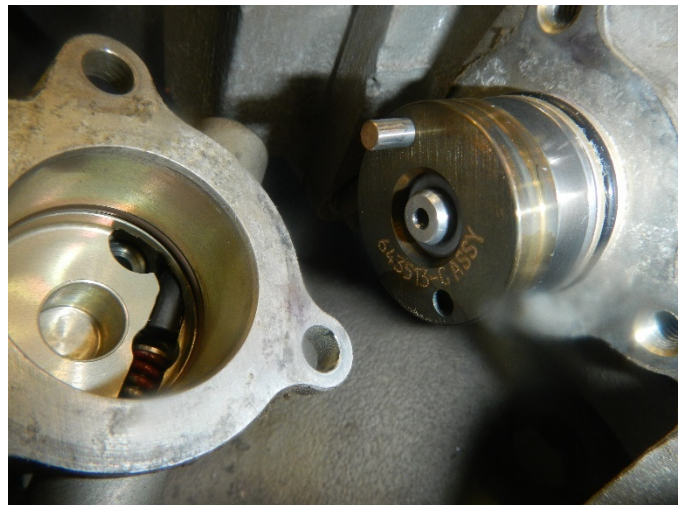
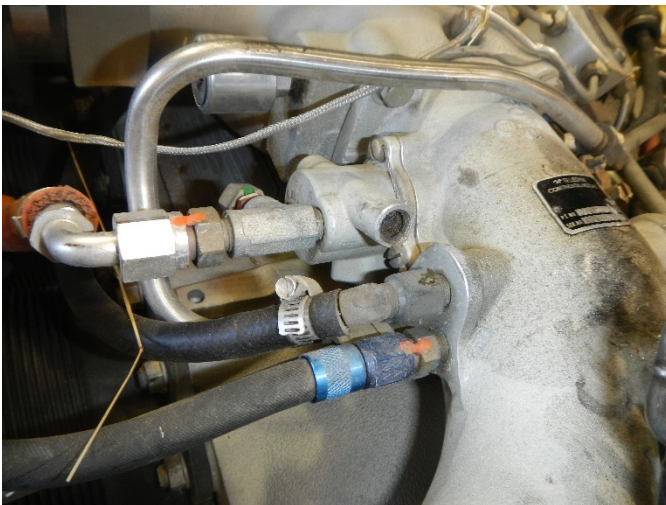
Manufacturer: Continental
Motors

P/N: 656785-??

S/N: A11EA139

Condition:

The throttle body remained attached to the topside of the engine with no pre-impact anomalies or signs of fuel leakage noted. The flange attaching the throttle body to the plenum was cracked on the left side and the throttle body mount was damaged. The throttle cable remained attached to the throttle lever. The throttle lever was manipulated after the cable was disconnected and the throttle shaft rotated with no signs of slipping noted. The throttle shaft was bent slightly. The reference lines to and from the throttle body remained secured as did the fuel lines; however, the upper deck reference fitting on the left side was cracked and the reference line was displaced down toward the cylinders. Fuel was present in the lines to and from the fuel metering unit. Disassembly of the fuel metering unit revealed no pre-accident anomalies and fuel was present in the metering unit.



ENGINE EXAMINATION REPORT

FILE NUMBER:	17-039	ENGINE S/N:	1004739	PAGE 19 of 41
--------------	--------	-------------	---------	---------------

FUEL MANIFOLD VALVE

Manufacturer: Continental Motors

P/N: 646433-17A1

S/N: C11EA078

Condition: The fuel manifold valve remained secured on the topside of the engine with the fuel injection lines intact. Fuel was present in the line between the fuel metering unit and the fuel manifold valve. Disassembly of the fuel manifold valve revealed it was full of fuel, the screen was clear, and the diaphragm and plunger were in place with no pre-accident anomalies noted with any of the internal components. There was no indication of water contamination when a water detecting paste was placed in the fuel found in the fuel manifold valve.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

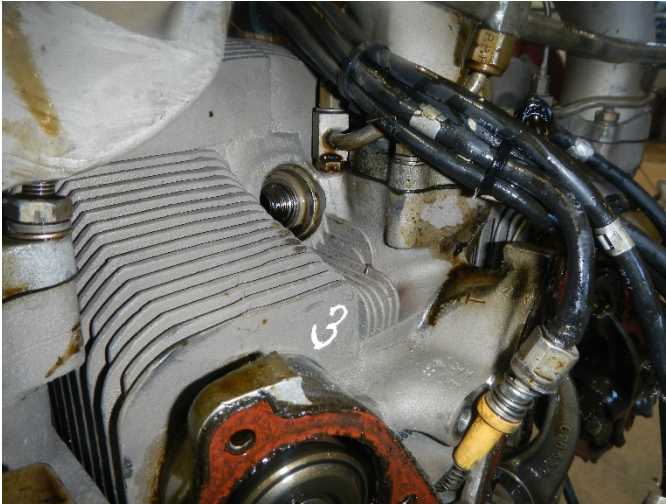
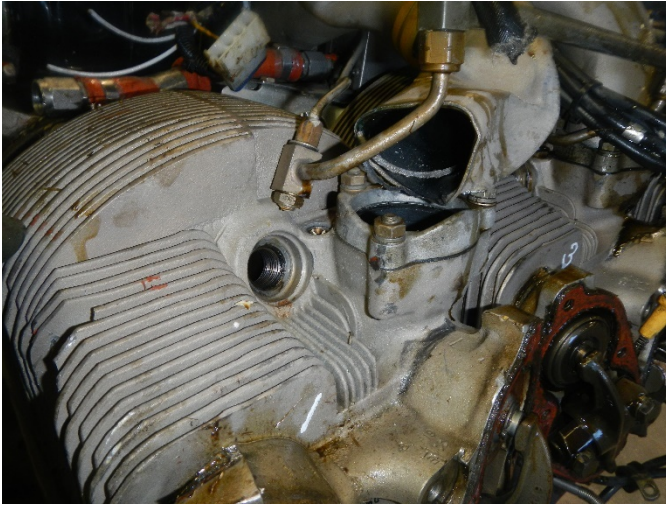
1004739

PAGE 20 of 41

FUEL NOZZLES AND LINES

Condition:

The fuel injection lines remained in place and intact though they received deformation damage. All of the fuel injector nozzles remained attached to the lines, though the #1 fuel injector nozzle was fractured where it threaded into the cylinder. The upper deck reference line remained secured to each nozzle, but it sustained deformation damage. No pre-accident anomalies were noted externally. The nozzles were removed from their respective cylinders and all were clear and free from any obstructions



ENGINE EXAMINATION REPORT

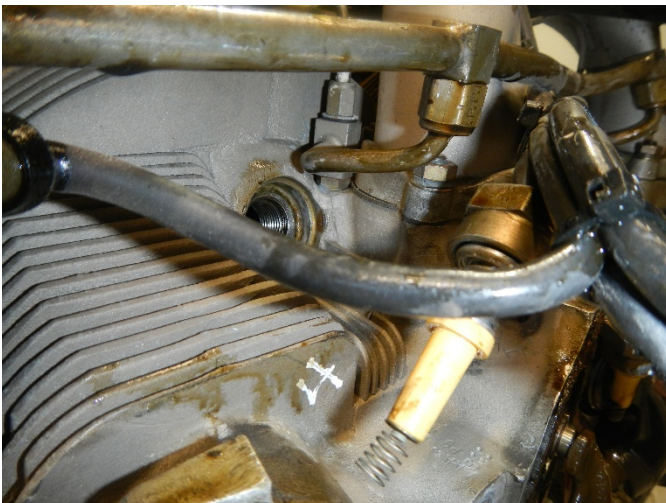
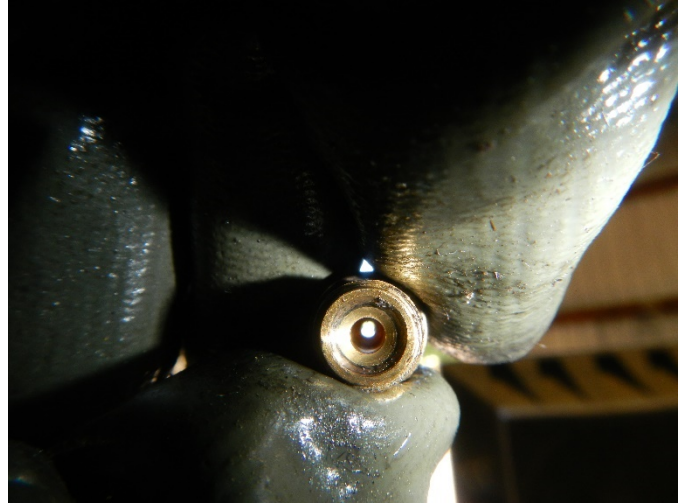
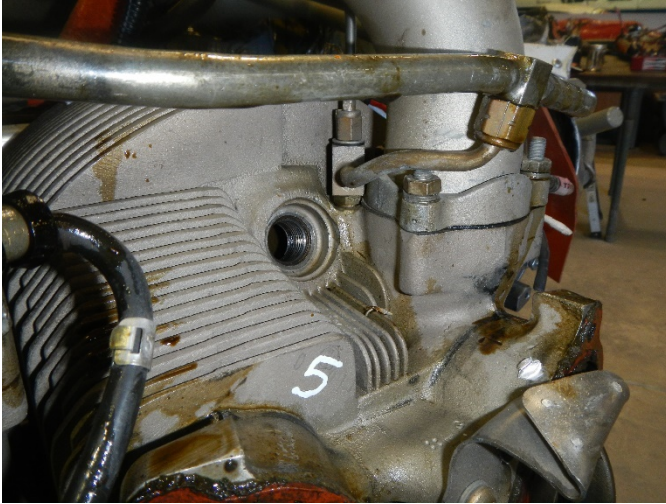
FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 21 of 41



ENGINE EXAMINATION REPORT

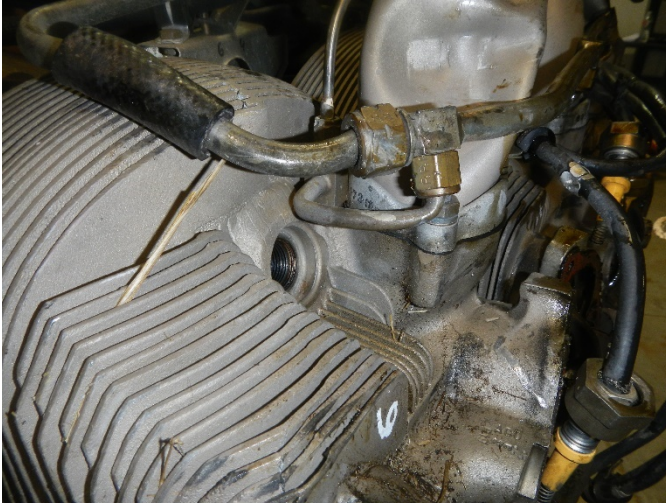
FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 22 of 41



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 23 of 41

LUBRICATION SYSTEM

OIL SUMP

Condition:

The oil sump drain plug was displaced and the oil sump was breached. The oil sump was displaced up toward the bottom of the engine.



OIL PICKUP TUBE & SCREEN

Condition:

The oil pickup tube and screen were not observed.

ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

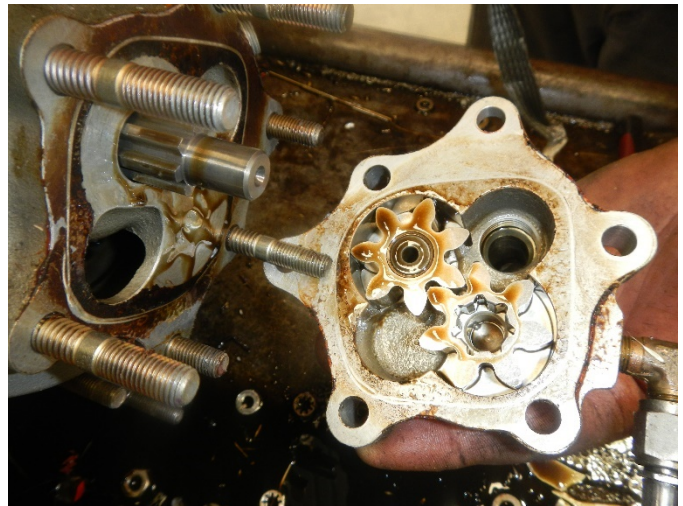
PAGE 24 of 41

OIL PUMPS

Condition:

The engine oil supply pump remained attached to the backside of the engine with no signs of oil leaks noted. The oil pump housing cap was removed and residual oil coated the internal components with no signs of lubrication distress or pre-accident anomalies. The oil pressure relief valve did not display any evidence of unusual seating.

The oil scavenge pump was in place on the backside of the starter adapter with no signs of an oil leak noted. Removal of the housing cap revealed residual oil coating the internal components with no signs of lubrication distress or pre-accident anomalies.



ENGINE EXAMINATION REPORT

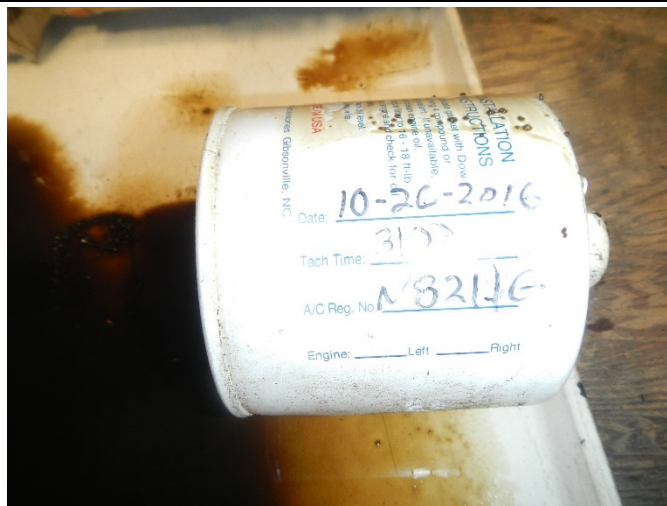
FILE NUMBER:	17-039	ENGINE S/N:	1004739	PAGE 25 of 41
--------------	--------	-------------	---------	---------------

OIL FILTER

Manufacturer: Tempest

P/N: AA48108-2

Condition: The oil filter remained in place on the adapter and the safety-wire was intact. Residual oil poured out from the filter with no pre-accident anomalies noted.



OIL COOLER

Manufacturer: Niagara Thermal Products

P/N: 654585

S/N: E10-8564-180

Condition: The oil cooler remained in place on the backside of the engine, but its mounting system was fractured and the cooler could be pulled away from the engine without removing its mounting hardware. The cooler sustained impact-related deformation damage, but was otherwise unremarkable.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 26 of 41

CYLINDERS

NOTE: The photographs that follow each cylinder condition description represent the cylinder's overhead components, the piston, the intake valve, and the exhaust valve, in that order unless otherwise specified.

CYLINDER #1

Condition: The cylinder remained attached to the crankcase with no external signs of operational distress noted. The rocker covers were removed and no pre-accident anomalies were noted with the valve springs or rockers. Residual oil coated the overhead components. The top sparkplug was removed and a borescope inspection of the cylinders was conducted and documented. No pre-accident anomalies were noted with the piston, barrel, valves or valve seats. Thumb compression was obtained and valve train continuity was confirmed during rotation of the crankshaft.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

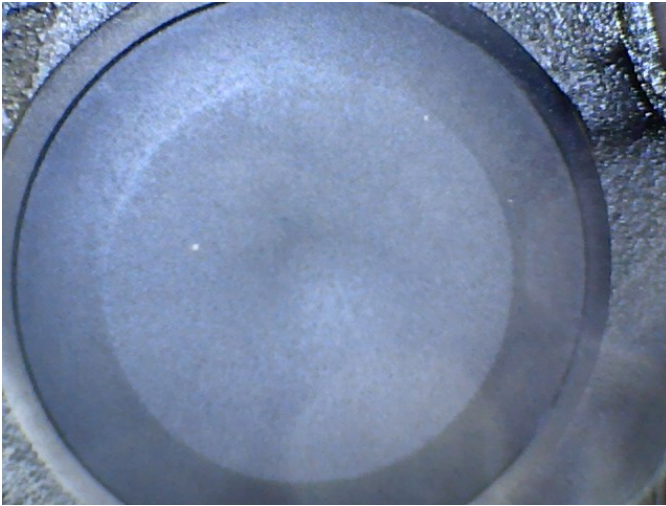
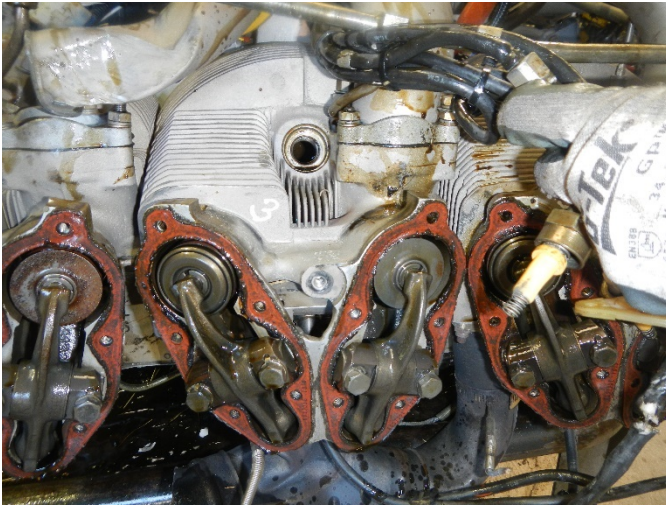
ENGINE S/N:

1004739

PAGE 27 of 41

CYLINDER #3

Condition: The cylinder remained attached to the crankcase with no external signs of operational distress noted. The rocker covers were removed and no pre-accident anomalies were noted with the valve springs or rockers. Residual oil coated the overhead components. The top sparkplug was removed and a borescope inspection of the cylinders was conducted and documented. No pre-accident anomalies were noted with the piston, barrel, valves or valve seats. Thumb compression was obtained and valve train continuity was confirmed during rotation of the crankshaft.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

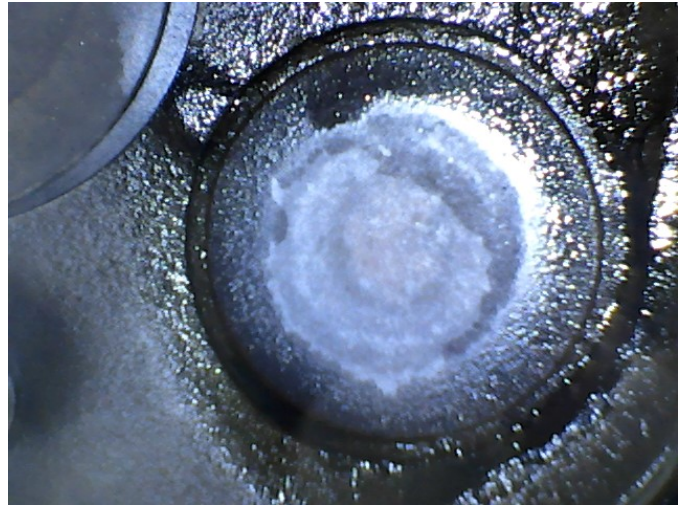
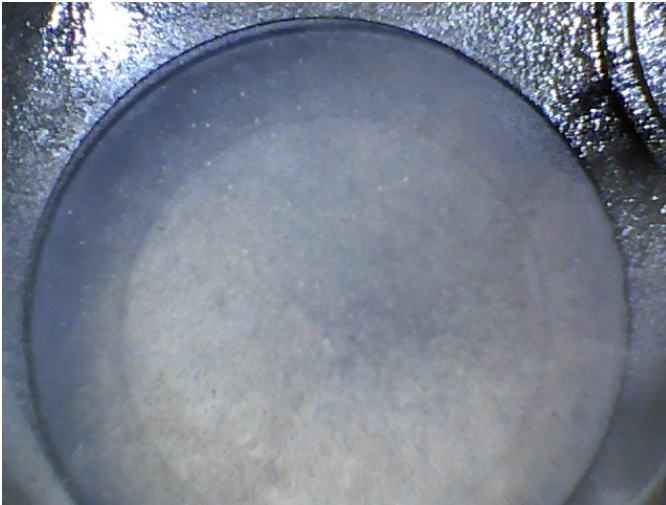
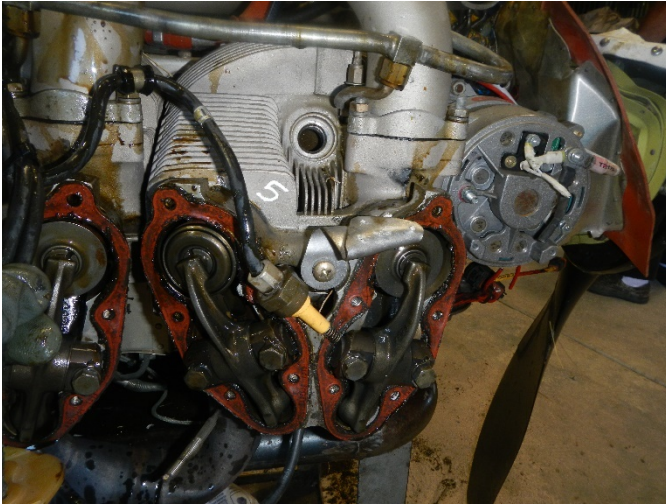
ENGINE S/N:

1004739

PAGE 28 of 41

CYLINDER #5

Condition: The cylinder remained attached to the crankcase with no external signs of operational distress noted. The rocker covers were removed and no pre-accident anomalies were noted with the valve springs or rockers. Residual oil coated the overhead components. The top sparkplug was removed and a borescope inspection of the cylinders was conducted and documented. No pre-accident anomalies were noted with the piston, barrel, valves or valve seats. Thumb compression was obtained and valve train continuity was confirmed during rotation of the crankshaft.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 29 of 41

CYLINDER #2

Condition: The cylinder remained attached to the crankcase with no external signs of operational distress noted. The rocker covers were removed and no pre-accident anomalies were noted with the valve springs or rockers. Residual oil coated the overhead components. The top sparkplug was removed and a borescope inspection of the cylinders was conducted and documented. No pre-accident anomalies were noted with the piston, barrel, valves or valve seats. Thumb compression was obtained and valve train continuity was confirmed during rotation of the crankshaft.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

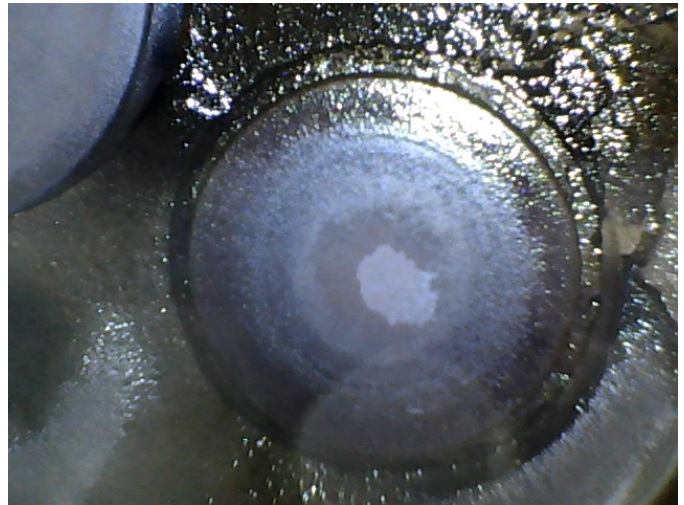
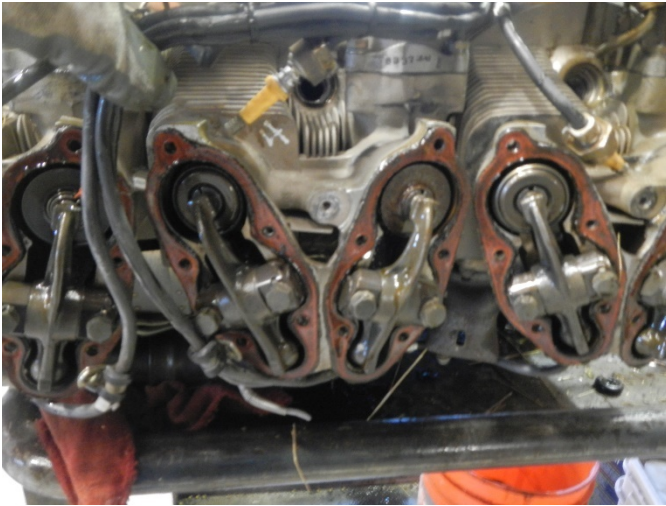
ENGINE S/N:

1004739

PAGE 30 of 41

CYLINDER #4

Condition: The cylinder remained attached to the crankcase with no external signs of operational distress noted. The rocker covers were removed and no pre-accident anomalies were noted with the valve springs or rockers. Residual oil coated the overhead components. The top sparkplug was removed and a borescope inspection of the cylinders was conducted and documented. No pre-accident anomalies were noted with the piston, barrel, valves or valve seats. Thumb compression was obtained and valve train continuity was confirmed during rotation of the crankshaft.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

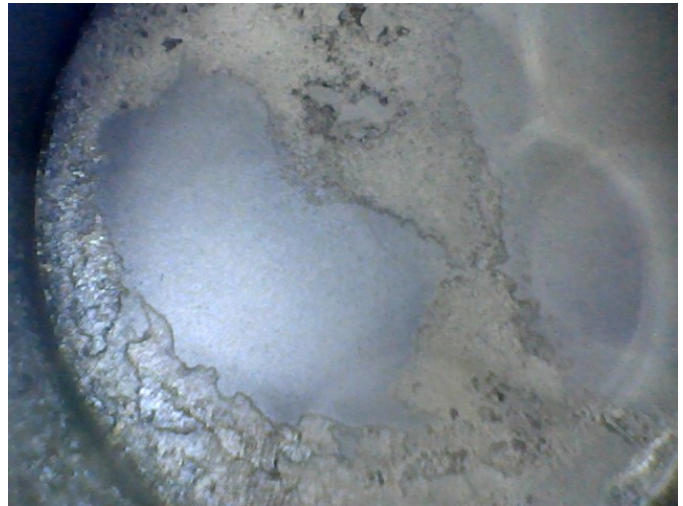
ENGINE S/N:

1004739

PAGE 31 of 41

CYLINDER #6

Condition: The cylinder remained attached to the crankcase with no external signs of operational distress noted. The cooling fins on the topside sustained cracking and displacement damage. The rocker covers were removed and no pre-accident anomalies were noted with the valve springs or rockers. Residual oil coated the overhead components. The top sparkplug was removed and a borescope inspection of the cylinders was conducted and documented. No pre-accident anomalies were noted with the piston, barrel, valves or valve seats. Debris consistent with loose combustion deposits were noted on the bottom of the cylinder and around the bottom sparkplug. Thumb compression was obtained and valve train continuity was confirmed during rotation of the crankshaft.



ENGINE EXAMINATION REPORT**FILE NUMBER:**

17-039

ENGINE S/N:

1004739

PAGE 32 of 41**CRANKCASE ASSEMBLY****CRANKCASE****Condition:**

The crankcase halves remained intact with no external signs of operational distress.

CRANKSHAFT ASSEMBLY**CRANKSHAFT****Condition:**

The crankshaft remained intact and continuity was confirmed from the propeller flange aft to the crankshaft gear and out to each connecting rod and piston during crankshaft rotation. No binding or pre-accident anomalies were noted.

**CAMSHAFT****CAMSHAFT****Condition:**

The camshaft was not observed; however, camshaft continuity was confirmed during crankshaft rotation by observing the movement of all 12 rockers.

**ACCESSORY
GEARS****Condition:**

The accessory gears were observed after magneto removal. No pre-accident anomalies were noted.

ENGINE EXAMINATION REPORT

FILE NUMBER:	17-039	ENGINE S/N:	1004739	PAGE 33 of 41
---------------------	--------	--------------------	---------	----------------------

ACCESSORIES

STARTER	Manufacturer: Energizer	P/N: Not Recorded	S/N: Not Recorded
Condition:	The starter motor was separated from the adapter and the mounting flange remained intact but the motor housing was fractured and separated. No pre-accident anomalies were noted with the unit.		
STARTER ADAPTER			
Condition:	The starter adapter remained attached to the back side of the engine with no pre-accident anomalies or oil leaks noted. The scavenge pump housing and oil line remained in place.		

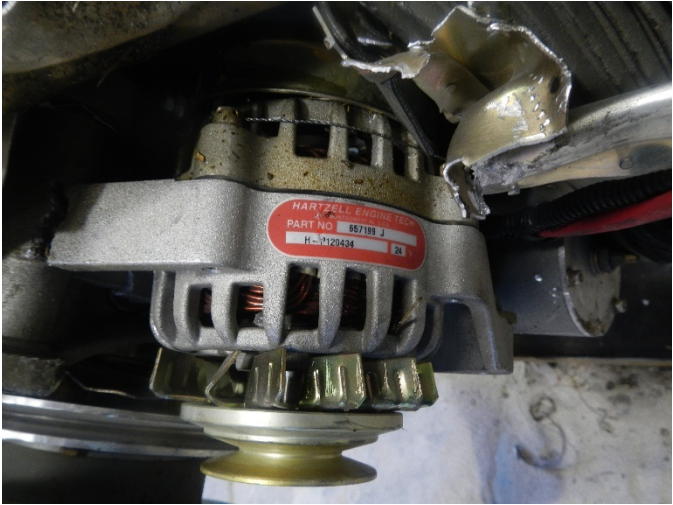


ALT/GEN #1	Manufacturer: Hartzell	P/N: 656802	S/N: H-P060330
Condition:	The engine-driven alternator remained in place on the front right side of the engine and no pre-accident anomalies were noted externally with the unit.		



ENGINE EXAMINATION REPORT			
FILE NUMBER:	17-039	ENGINE S/N:	1004739
			PAGE 34 of 41

ALT/GEN #2	Manufacturer: Hartzell	P/N: 657199 J	S/N: H-P120434
Condition:	The belt-driven alternator remained in place on the front left side of the engine with no pre-accident anomalies noted.		



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 35 of 41

LEFT TURBOCHARGER

Manufacturer: Hartzell

P/N:

S/N:

Condition:

The turbocharger remained attached to the engine mount system and the inlet filter was deformed around the compressor inlet. The filter housing was removed and the compressor and shroud did not reveal any pre-accident anomalies. The oil supply and return lines for the turbocharger bearing remained in place with no signs of leaking. Burnt grass was observed on the v-band clamp area of the turbine shroud. The compressor was manually manipulated and the compressor rotated freely with no binding noted.



ENGINE EXAMINATION REPORT

FILE NUMBER:	17-039	ENGINE S/N:	1004739	PAGE 36 of 41
--------------	--------	-------------	---------	---------------

RIGHT TURBOCHARGER

Manufacturer: Hartzell

P/N:

S/N:

Condition:

The right turbocharger remained attached to the engine mount system. The exhaust tailpipe was fractured aft of the v-band coupling. The oil supply and return lines for the turbocharger bearing remained in place with no signs of leaking. The compressor was manually manipulated and the compressor rotated freely with a coinciding rotation of the turbine.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 37 of 41

TURBO CONTROLLER

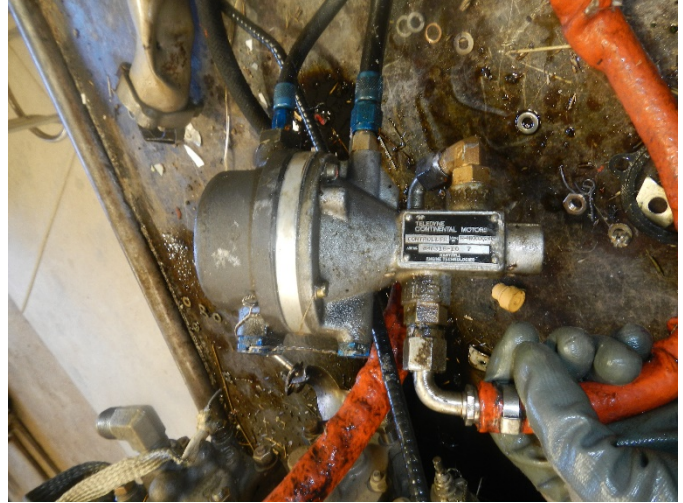
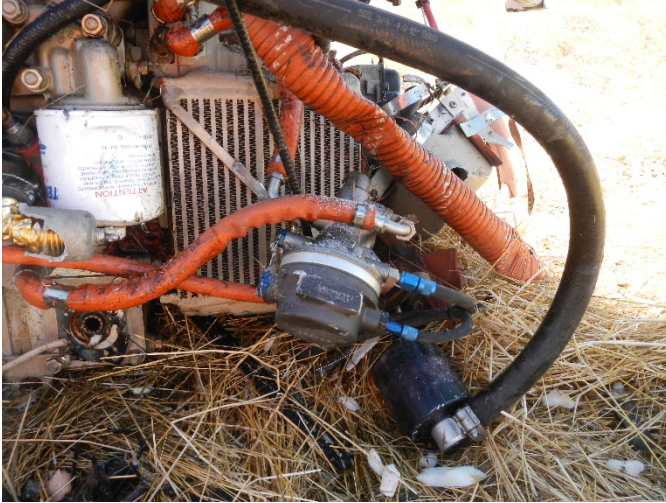
Manufacturer: Hartzell

P/N: 646318-10

S/N: H-NKN00202

Condition:

The pressure controller was separated from the firewall but the oil and reference lines to and from the controller remained intact and in place.



ENGINE EXAMINATION REPORT

FILE NUMBER: 17-039 ENGINE S/N: 1004739 PAGE 38 of 41

WASTEGATE

Manufacturer: Hartzell

P/N: 646317-1 5

S/N: H-0CN00117

Condition: The wastegate actuator linkage remained intact and the oil lines to and from the actuator remained in place and intact. The mount for the wastegate actuator was fractured and the linkage was displaced slightly. Compressed air was applied to the actuator ports with actuation noted.



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 39 of 41

OVERBOOST VALVE

Manufacturer: Kelly
Aerospace

P/N: 639319-26

S/N: H-NKN00223

Condition:

The intake tube and overboost valve were separated from the induction system. It was found near the initial impact area and the tube was flattened. No pre-accident anomalies were noted with the unit and the spring and poppet remained intact.



ENGINE EXAMINATION REPORT**FILE NUMBER:**

17-039

ENGINE S/N:

1004739

PAGE 40 of 41**PROPELLER****PROPELLER GOVERNOR**

Manufacturer: Hartzell

P/N: 21285-001

S/N: Not Recorded

Condition:

The cable-less governor remained attached to the engine with no pre-accident anomalies noted. However, the governor was not examined in any detail.

**PROPELLER**

Manufacturer: Hartzell

P/N: PHC-J3Y1F-1N

S/N: NJ489B

Condition:

The three-bladed composite propeller remained attached to the crankshaft and two of the blades were separated from the hub and were found near the initial impact area. One of the separated blades displayed leading edge and chord-wise paint erosion. The other separated blade displayed a split along the leading edge near the blade root, but otherwise remained relatively undamaged. The blade that remained attached to the hub was displaced forward at the tip and displayed light chord-wise paint erosion at the tip. The propeller spinner was crushed aft around the hub and was slightly displaced toward one side with the tip folded over the hub



ENGINE EXAMINATION REPORT

FILE NUMBER:

17-039

ENGINE S/N:

1004739

PAGE 41 of 41

