CONTINENTAL™
AEROSPACE TECHNOLOGIES

ENGINE EXAMINATION REPORT
N257AR

ENGINE MODEL	Titan IOX-370-CLD1T4
ENGINE SERIAL NUMBER	E9E010
AIRCRAFT MAKE & MODEL	Commuter Craft - Innovator
AIRCRAFT SERIAL NUMBER	002 (Prototype)
AIRCRAFT REGISTRATION	N257AR
FILE NUMBER	18-372

NAME	SIGNATURE	DATE
Mike Council	[redacted]	4-2-2020

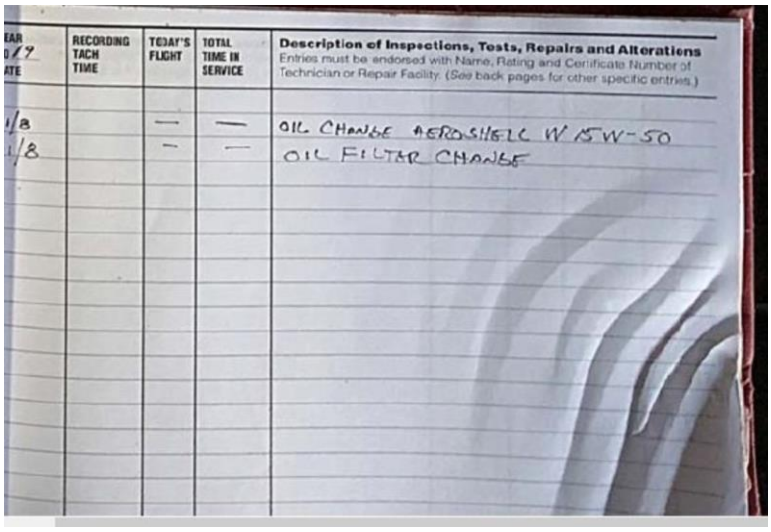
GENERAL INFORMATION

EXAMINATION		ACCIDENT DATA	
DATE	3-23-2019 On-Site 3-24-2019 Recovery	**NTSB ACCIDENT #**	ERA19FA134
FACILITY	Atlanta Air Recovery	**NTSB INVESTIGATOR**	Brian Rayner
ADDRESS	Uniform Drive Griffin, GA	**FAA INVESTIGATOR**	Juli O'Gorman
		ACCIDENT DATE	3-23-2019
		ACCIDENT LOCATION	Calhoun, GA

ENGINE INFORMATION

ENGINE POSITION	Single – Rear-facing pusher configuration
TOTAL TIME	Undetermined
TIME SOH	NA
TYPE & TIME SLI	Undetermined
BUILD DATE	9-20-2016
IN SERVICE DATE	Undetermined

Significant logbook information: The only entry in the engine maintenance logbook documented and oil and filter change dated 1-8-2019.



DATE	RECORDING TACH TIME	TODAY'S FLIGHT	TOTAL TIME IN SERVICE	Description of Inspections, Tests, Repairs and Alterations Entries must be endorsed with Name, Rating and Certificate Number of Technician or Repair Facility. (See back pages for other specific entries.)
1/8		—	—	OIL CHANGE AEROSHELL W 15W-50
1/8		—	—	OIL FILTAR CHANGE

Report Summary: Search Code(s):

An examination of the engine was performed by the CMI Investigator under supervision of the NTSB Investigator. The inspection of this engine did not reveal any pre-impact anomalies that would have prevented Its ability to produce rated horsepower.

Disposition of engine following exam: The engine was shipped to Continental Motors for further examination but was returned to Atlanta Air Recover without further examination at the request of the NTSB IIC.

INSPECTION WITNESSES			
NAME	Mike Council	**NAME**	Brian Rayner
ADDRESS	Mobile, Alabama	**ADDRESS**	Eastern Region
ORGANIZATION	Continental Aerospace Technologies	**ORGANIZATION**	NTSB
PHONE	[redacted]	**PHONE**	[redacted]

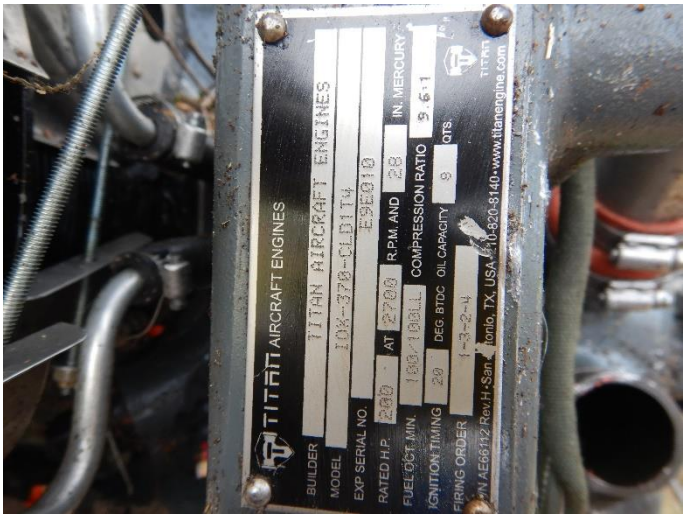
EXTERNAL INSPECTION OF ENGINE

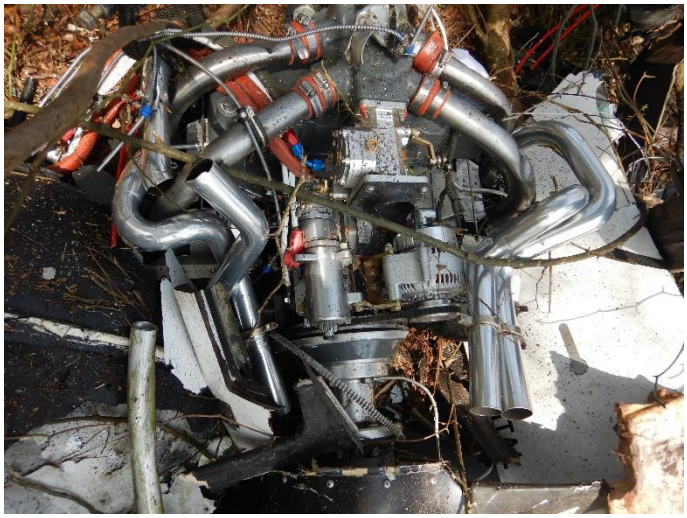
An engine data plate attached to the accident engine identified the engine as a Titan Aircraft Engine, model IOX-370-CLD1T4, serial number E9E010, rated at 200 horsepower at 2700 RPM.

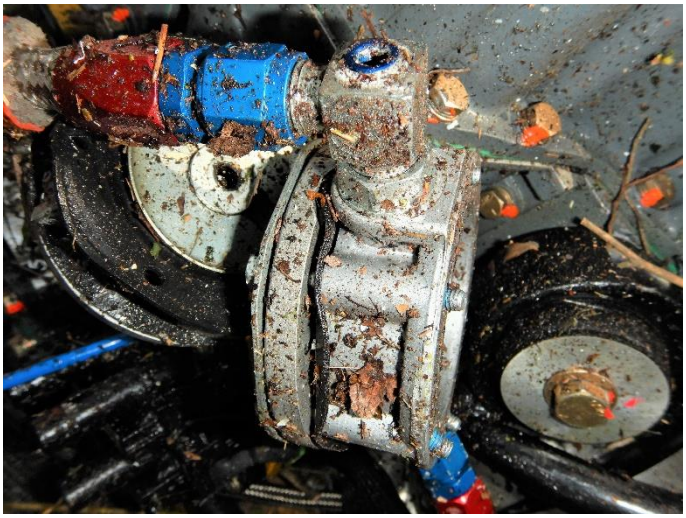
The engine mount tubes failed due to impact forces and the engine separated from the fuselage. The engine driven fuel pump separated but was recovered from the wreckage. The electronic “e-mags” received impact damage and the ignition harnesses separated. The right E-mag electronic ignition module was impact damaged.

Cylinder # 1 received impact damage with wood fibers imbedded in the cooling fins. The # 1 and # 4 exhaust tubes were impact damaged and the # 3 induction tube separated. The starter ring gear separated from the pulley. The oil filter adapter separated but was recovered from the wreckage path. The oil filter remained intact and attached to the broken adapter with proper safety wire still attached. The outer oil pump cover was impact damaged and separated from the pump. The oil cooler separated.

The two-blade constant-speed propeller hub remained attached to the engine crankshaft flange. Both composite propeller blades separated approximately 10-12 inches outboard of the propeller root consistent with engine power at impact.





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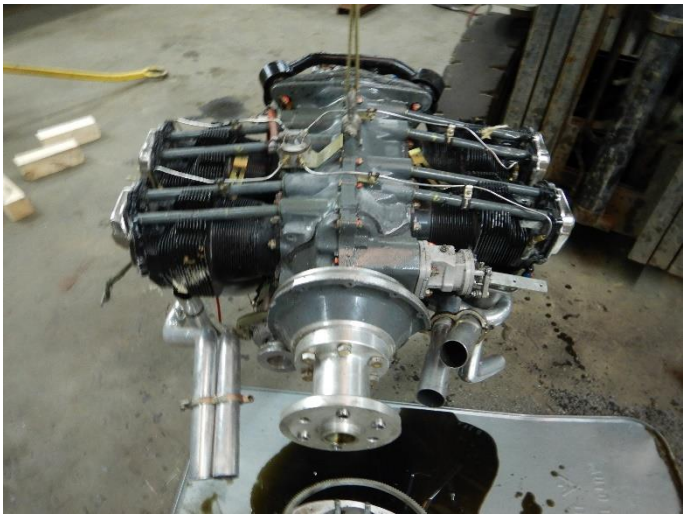

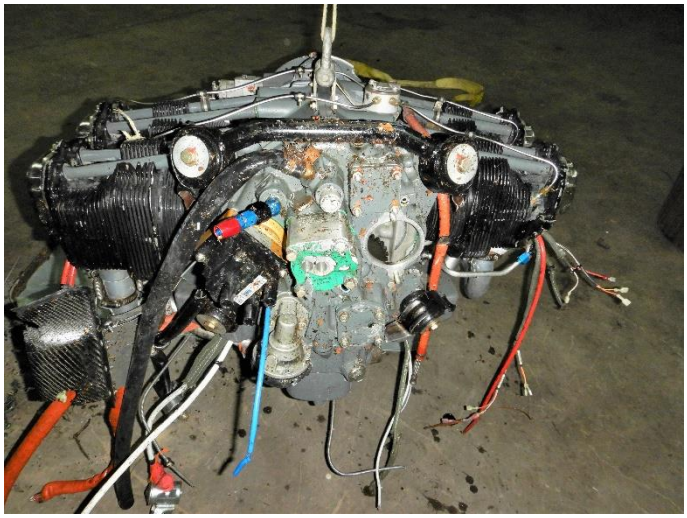


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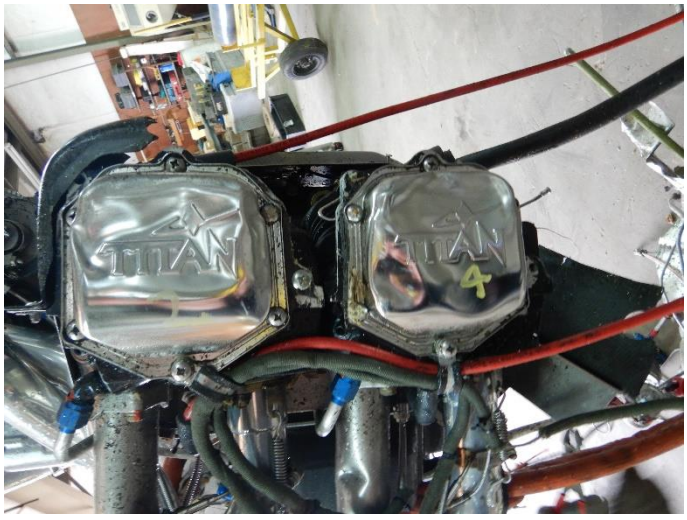
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EMAG
Model P11414
Serial# 4318
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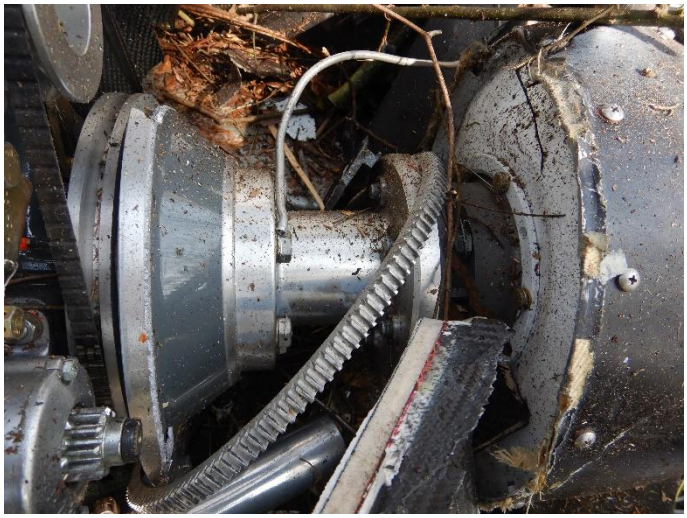

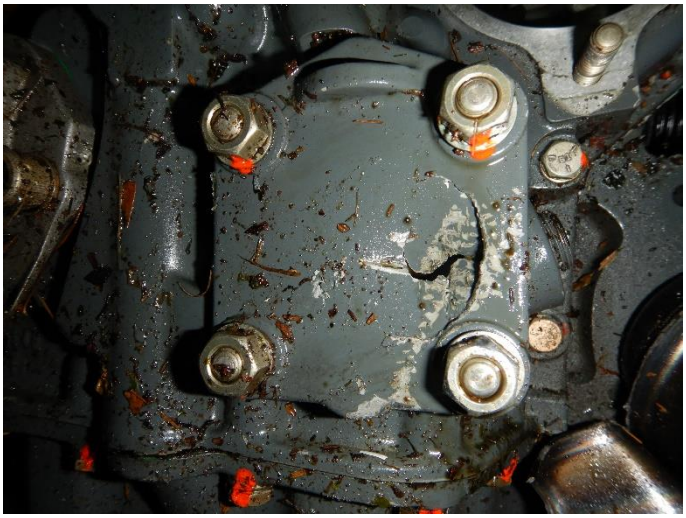

INTERNAL INSPECTION OF ENGINE

The top sparkplugs were removed and inspected. All four top sparkplugs (automotive type) exhibited normal combustion signatures and wear patterns. Number 4 top sparkplug was impact damaged. Cylinders 2 and 4 produced thumb compression when the engine was manually rotated. Cylinders 1 and 3 did not produce thumb compression. The cylinders were inspected using a lighted electronic borescope. All piston domes and valves faces exhibited normal combustion signatures. Cylinder # 1 exhaust valve was not fully closing. Cylinder # 1 rocker cover and cylinder head exhibited impact damage.

Cylinder # 1 rocker cover was removed. The intake and exhaust rocker arms, pushrods and valve springs were intact and moved correctly when the engine was manually rotated. However, the exhaust valve stem did not move fully in the valve guide which kept the exhaust valve from fully closing. Each cylinder rocker cover exhibited impact damage.

The right E-mag position was marked with a yellow paint pen then the E-mag was removed. The accessory gears moved correctly when the engine was manually rotated. The E-mag was then reinstalled.


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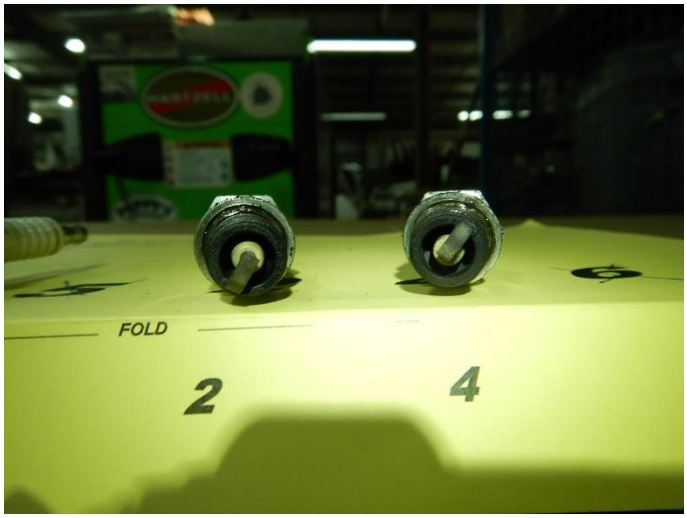
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