



Continental Motors, Inc.

ENGINE FIELD INSPECTION REPORT

FINAL


ENGINE MODEL: TSIO-520-R9B

ENGINE SERIAL: 293644R

AIRCRAFT MODEL: Cessna-T210L

SERIAL NUMBER: 21060667

REGISTRATION: N1631X

Examiner	Signature	Date
John T. Kent		4/15/2014

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GENERAL INFORMATION			
EXAMINATION		ACCIDENT DATA	
Date	4/9/2014	NTSB Accident #:	
Facility	Atlanta Air Recovery	NTSB Investigator:	
Address	██████████	FAA Investigator:	
City	Griffin	Law Enforcement:	N/A
State and Zip	Georgia 30224	Coroner / Medical Examiner	N/A

ENGINE INFORMATION	
Make	Continental Motors Inc.
Model	TSIO-520-R9B
Serial No.	293644R
Engine Position	Front
Total Time	4,186.8 Hours
Time SOH	1,218.8 Hours
Build Date	7/6/1995
In Service Date	Unknown
Removal Date	4/3/2014

AIRCRAFT / ACCIDENT INFORMATION	
Aircraft Make	Cessna
Aircraft Model	T210L
Aircraft Serial No.	21060667
Registration No.	N1631X
Accident Date	4/3/2014
Accident Location	Clayton, Alabama

Significant logbook information: The engine was overhauled by Mena Aircraft Engines in Mena, Arkansas on October 1, 2010. On January 10, 2014 cylinders two, three and six were removed, repaired and reinstalled on the engine by Tennessee Aircraft Services Inc. in Jackson, Tennessee. The work was performed by Joe Norris and Robert Batteman.

Report Summary:

Search Code:

13-24-03

The crankshaft was separated at the number 2 main journal and crank cheek. The number 2 main bearing was impact damaged and extruded out from the main bearing saddle on the crankcase halves. One rod cap bolt was separated on the number two connecting rod, and the rod cap bearing was broken in to several parts and most of it was found in the oil sump. No heat damage was observed on the main or rod cap bearings and they were coated with oil. The crankshaft was retained by the NTSB for further examination.

Disposition of engine following exam: Engine was released to the Insurance Company.

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Inspection Witnesses

Name	John T. Kent	Name	Todd Thaxton
Address	██████████ Mobile, AL. 36615	Address	Griffin, Georgia
Organization	Continental Motors Inc.	Organization	Atlanta Air Recovery
Phone No	██████████	Phone No	██████████
Name	Eric Alleyne	Name	
Address	Atlanta, Georgia	Address	
Organization	NTSB	Organization	
Phone No	██████████	Phone No	
Witness	Charles Carlisle	Witness	
Address	Vestavia Hills, Alabama	Address	
Organization	FAA/FSDO	Organization	
Phone No	██████████	Phone No	
Witness	Andrew Hall	Witness	
Address	Wichita, Kansas	Address	
Organization	Cessna Aircraft Company	Organization	
Phone No	██████████	Phone No	

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EXTERNAL INSPECTION OF ENGINE:

The engine was intact with all of the accessories attached. The exhaust pipes were impact damaged, and the oil scavenge line was broken loose from the oil scavenge pump. The manifold pressure line was separated from the intake pipe. All of the cylinders were ECI cylinders.

The wreckage recovery crew reported that when they rotated the crankshaft using the propeller that the accessories on the rear of the engine did not rotate.



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Intake and Exhaust: The only damage to the intake was where the manifold pressure line separated from the intake pipe. The exhaust pipe was impact damaged.



Magnetos:

Left: Slick 6320, SN-08101396

Right, Slick 6320, SN-05030427

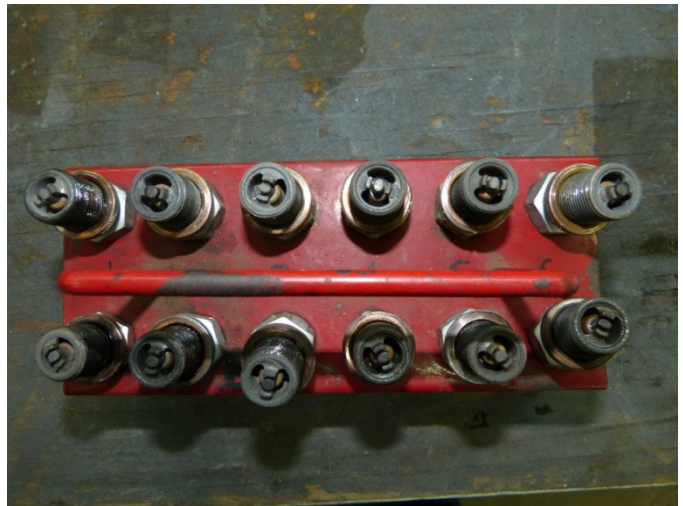
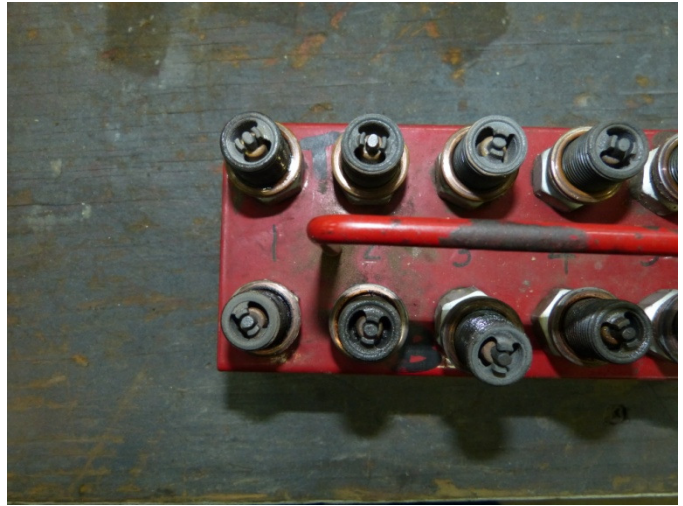
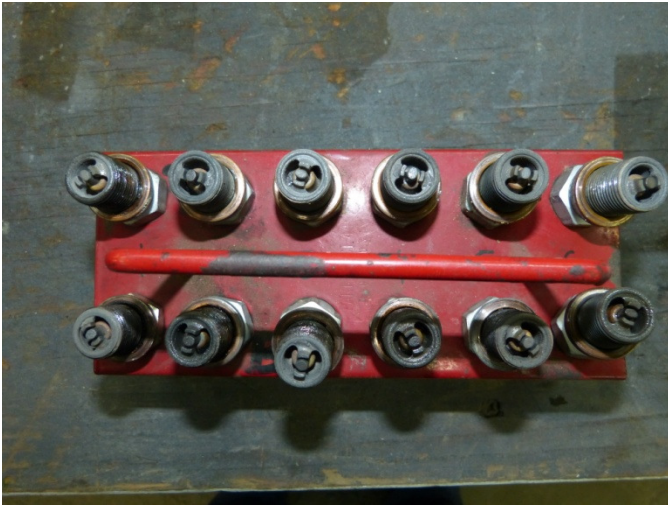
Both magnetos were in place and not damaged. They were both tested with an electric drill, and they both sparked at all ignition leads.



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Spark Plugs: Champion RHB-32E

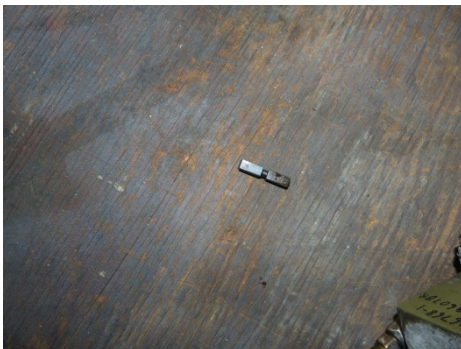
All of the spark plugs were removed and examined. The electrodes were worn out normal when compared to the Champion Check-A-Plug comparison card. They had light gray deposits in the electrode areas.



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Fuel Pump: TCM, PN-646768-1, SN-D269607BR

The fuel pump was in place and not damaged. The drive coupling was not damaged. The drive shaft was free to rotate. The fuel pump was tested using an electric drill, and it pumped solvent when the drive shaft was rotated with the electric drill.

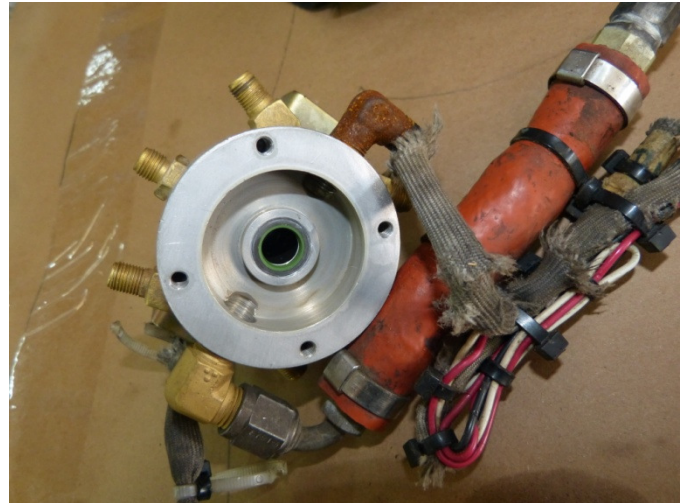


Fuel Manifold: TCM, PN-634326-4A15, SN-G139204CR

The safety wire and lead seal were in place. The unit was disassembled and the spring and diaphragm were not damaged. A small amount of debris was observed on the fuel screen. The screen was wet with fuel. The nut was tight on the plunger.



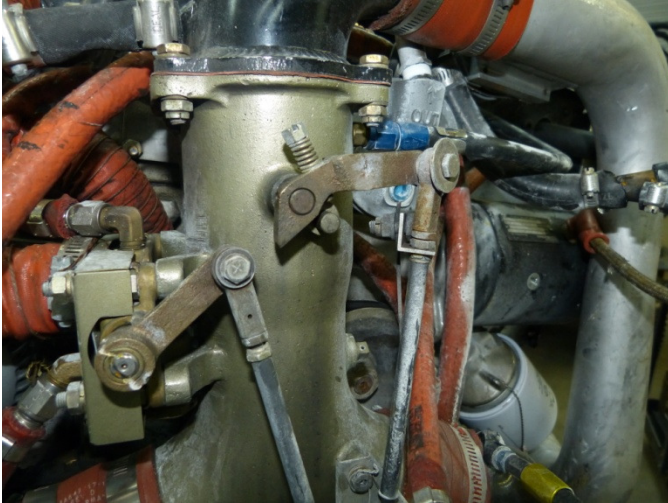
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Throttle Body and Metering Unit: TCM, PN-629703-11, SN-A00HA404R

The Throttle Body and Metering Unit were not damaged. The throttle and mixture controls were hooked up and were free to move. A small amount of debris was observed on the fuel screen.

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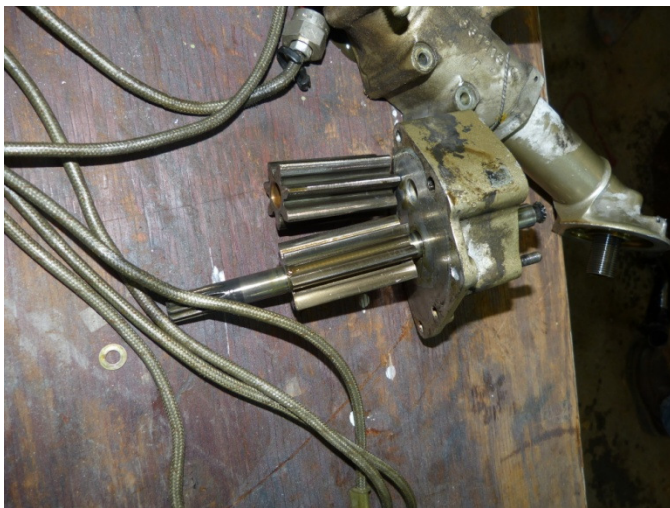
Fuel Nozzles: 14C

The fuel nozzles were in place and were not damaged. They were clean and clear.

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Oil Pump: The oil pump was in place and free to rotate. A few metal particles were observed in the pump cavity. The scavenge pump was in place and free to rotate. The pump gears were coated with oil.



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Oil Sump: The oil sump was not damaged. Some oil and a few metal particles were observed in the sump.



Oil Filter: Champion CH-48108-1
The oil filter was in place and not damaged. The element was not examined.

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Oil Cooler: No tag was observed on the oil cooler. Two bolts were broken of the oil cooler mount bracket. Clear oil poured from the cooler along with metal particles.



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Cylinders:

1. ECI, AEC85385, SN-J122894
2. ECI, AEC85385, SN-J133512
3. ECI, AEC85385, SN-J133513
4. ECI, AEC85385, SN-J122891
5. ECI, AEC85385, SN-J122892
6. ECI, AEC85385, SN-J133511

The number one piston could not be removed from the number one cylinder. The remainder of the cylinders were not damaged. They had light scoring in the barrels and light deposits in the domes. All of the valves were in place.



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Pistons: FAA/PMA AEC648044 5/10

The pistons were not damaged. The number one piston could not be removed from the number one cylinder. All of the rings were in place and coated with oil. Light combustion deposits were observed on the piston faces.

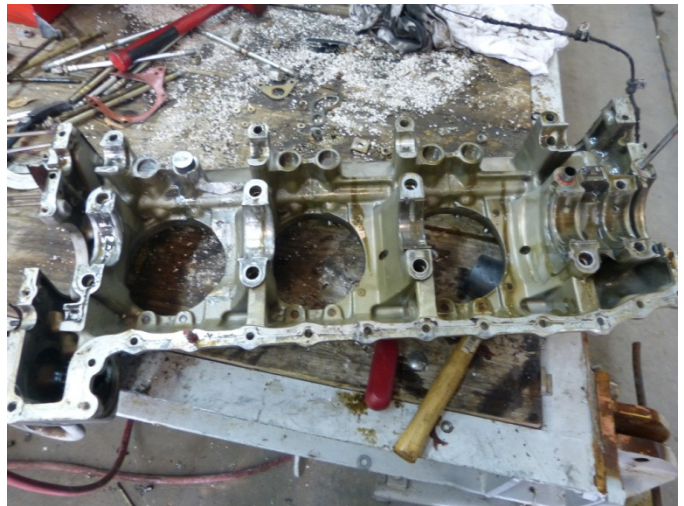
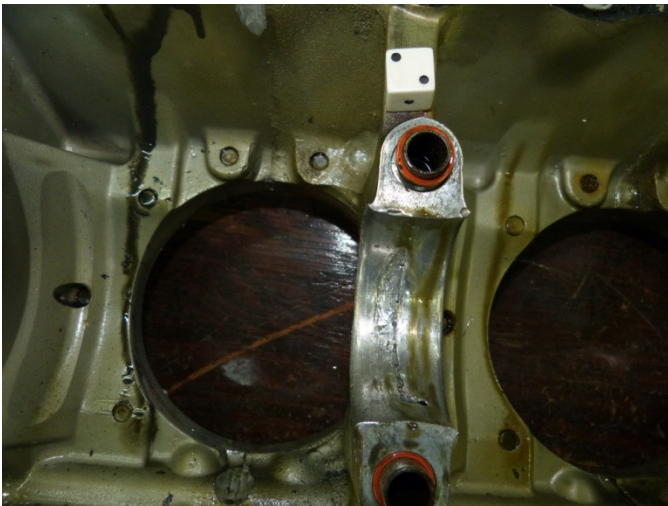
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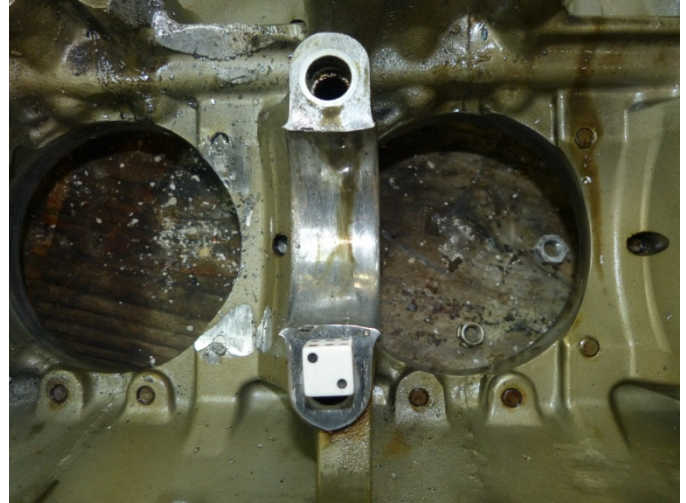
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Crankcase Halves: Both-OB 969S, Both-14865-3Q3

The crankcase halves had impact damage on their interiors, and the interiors were coated with oil. Heavy damage was observed on both crankcase halves on the number two main bearing saddles. The number two main bearing remained in the bearing saddle and had heavy impact damage and was extruded past the edge of the bearing saddle.

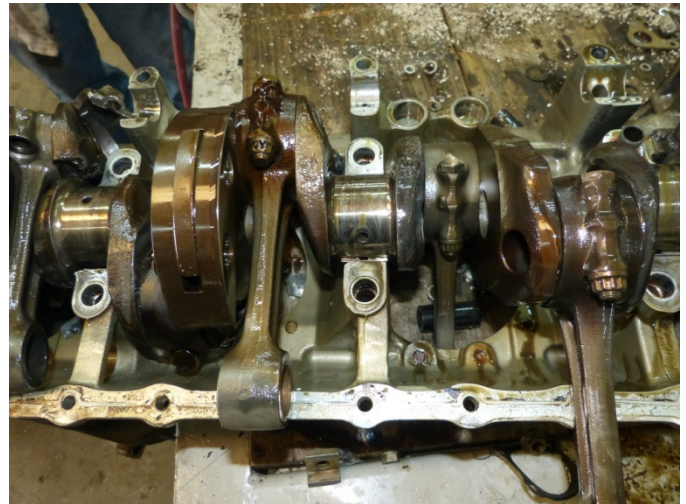


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Crankshaft: SN-C592, Heat Code T42, 631649F, T42/M010

The crankshaft was separated at the point where the number two main journal meets the number two crank cheek. All of the main journals and rod journal were coated with oil. The crankshaft was retained by the NTSB for further examination.



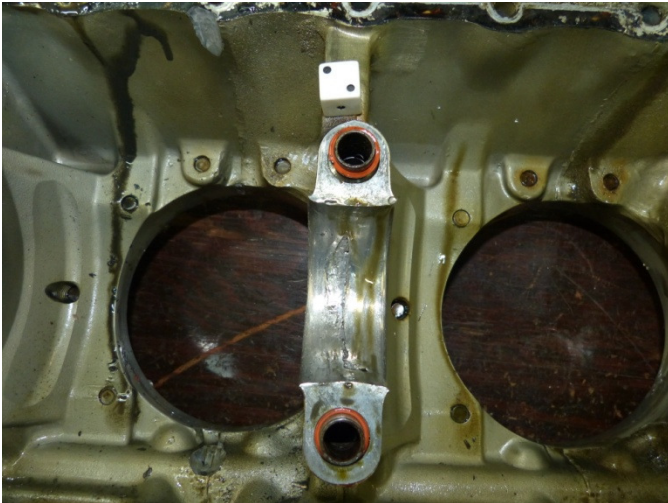
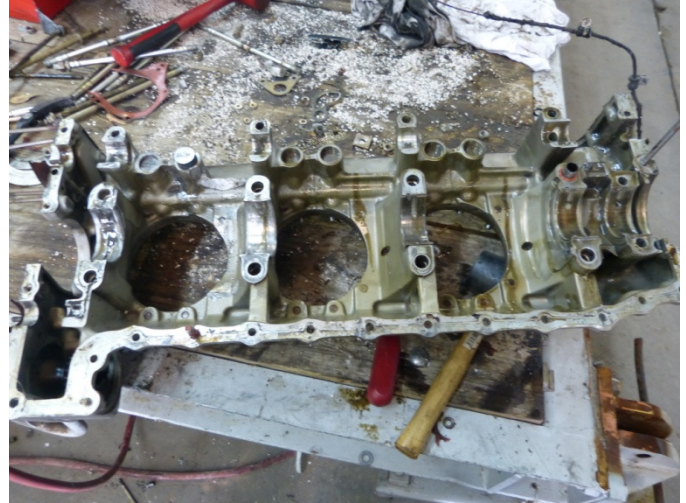
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Main Bearings: SA642720-M10

All of the main bearings were in place and coated with oil. The number two main bearing was in the bearing saddle and had heavy impact damage, but did not show any signs of heat discoloration. It was extruded over the edge of the crankcase bearing saddle.

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Connecting Rods: 632041F MI

The connecting rods were not damaged. The number two connecting rod had one rod cap bolt separated.

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Rod Cap Bearings: 630826-M10, 112E

The number two rod cap bearing was impact damaged and broken in to pieces. The remainder of the rod cap bearings were not damaged and were free to rotate on the rod journals.

Camshaft: 655384D-Z04KA215

The camshaft was intact with some impact damage. The camshaft lobes were coated with oil, and had scoring.

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Lifters: Intake-653888, Exhaust-653877

The valve lifters were in place and were coated with oil. They were not damaged.

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Starter: Kelly PN-MHJ4003SR, SN-HK120273
The starter was in place and not damaged. The drive shaft was free to rotate.



Starter Adapter: The started adapter was in place and the aft pulley was impact damaged. The drive shaft was free to rotate.

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Alternator: Planepower AL24-F60C, SN-46-140303 24V
The Alternator was not damaged and the drive shaft was free to rotate.



Vacuum Pump: Tempest PN-AA3216CW, SN-01M223
The vacuum pump was in place and not damaged. The drive shaft would not rotate.

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Turbocharger: Hartzell, 405610-5-9005, SN-HPFR00190
The turbocharger was in place and had impact damage. The turbine and compressor both rotated freely.



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Over Boost Valve: Kelly, PN-470944-12, SN-HF0251
The over boost valve was not damaged.



Controller: Kelly, PN-470638-7, SN-HE0134
The controller was in place and not damaged.

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Wastegate: The wastegate was attached and had some impact damage. It was not disassembled.



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Propeller Governor: McCauley, C290D4KT2, SN-735064

The propeller governor was in place and not damaged. The actuating arm was hooked up and was free to move. The drive shaft was free to rotate, and the oil screen was clean.



Propeller: McCauley, D3A34C402C, SN-920528

The propeller remained attached to the crankshaft, and the spinner was dented. All three blades were curled toward the direction of rotation and had some chordwise scaring.

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