

NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF AVIATION SAFETY
WASHINGTON, D.C.

October 16, 2018

N1537U ENGINE EXAMINATION REPORT

A. Accident : ERA18LA233

LOCATION : New Kent County Airport (W96)
DATE : August 26, 2018
TIME : 1610 eastern daylight time (EDT)
AIRCRAFT : Cessna 172 N1537U

B. Group:

Peter Wentz
National Transportation Safety Board
Ashburn, VA

David Harsanyi
Lycoming Engines
Williamsport, PA

Henry Soderlund
Textron Aviation
Wichita, KS

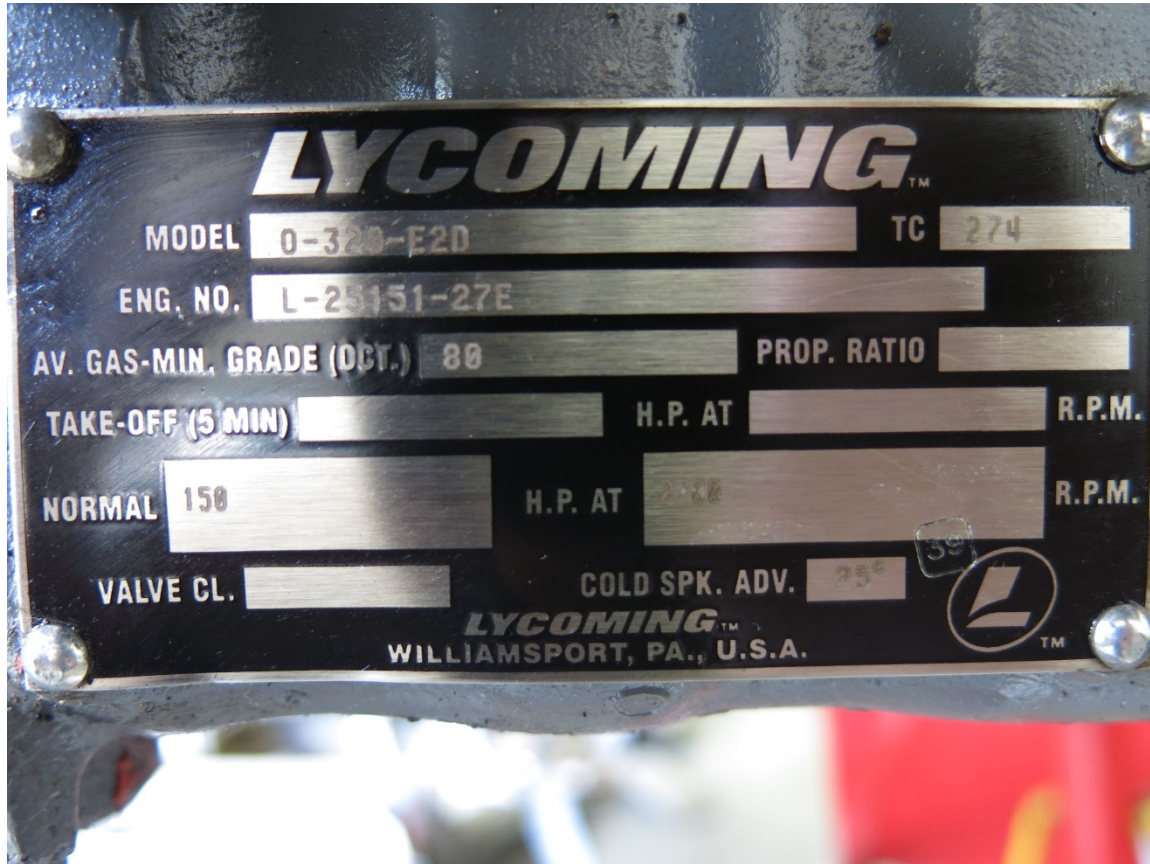
C. Summary

On August 26, 2018, about 1610 eastern daylight time, a Cessna 172M, N1537U, was substantially damaged when it impacted terrain at New Kent County Airport (W96) in Quinton, Virginia. The student pilot was seriously injured. Day visual meteorological conditions prevailed at the time, and no flight plan was filed for the solo cross-country instructional flight that departed from Chesapeake Regional Airport (CPK), Norfolk, Virginia, about 1510. The airplane was operated by Epix Aviation under the provisions of Title 14 Code of Federal Regulations Part 91.

D. Engine Information

1.0 Engine Information

Engine Manufacturer: Lycoming
Engine Model Number: O-320-E2D
Engine Serial Number: L-25151-27E

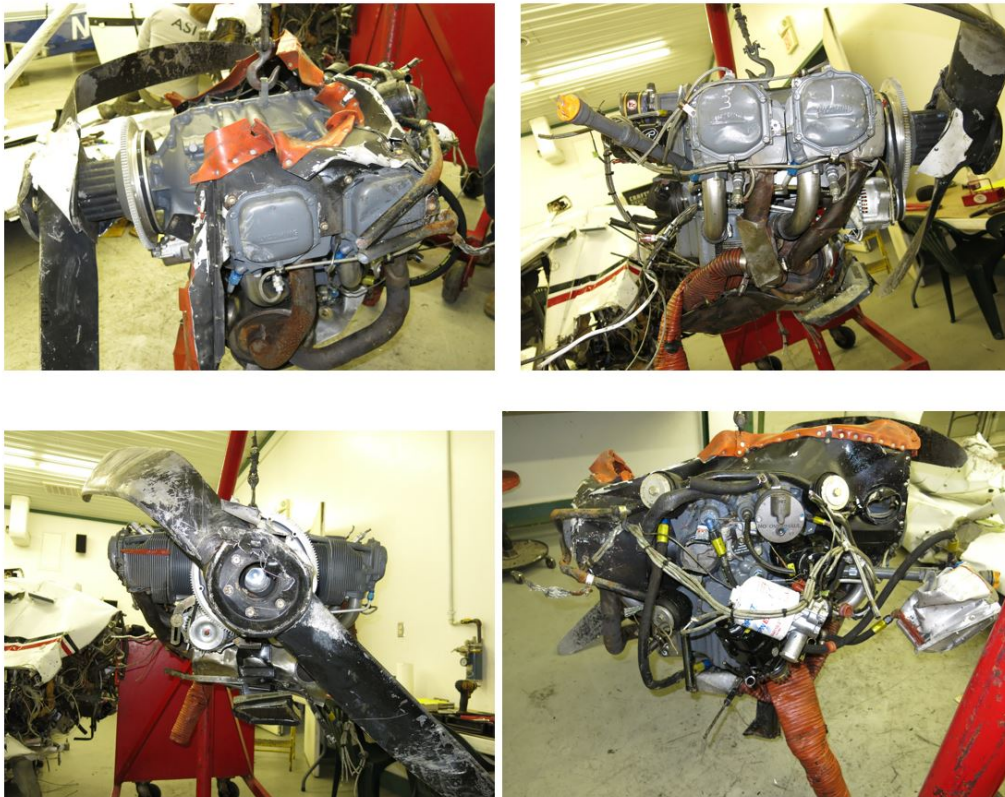


Photograph 1 – Engine Data Plate

2.0 Initial Examination

The engine remained mounted to the controls and firewall, following was noted:

- The oil filter, oil filter base and dip stick were fractured from the engine.
- The Left magneto was fractured from the engine and hanging from the ignition leads
- All other components remained attached to the engine (photograph 2).



Photograph 2 – Engine

E. Detailed Examination of Engine

1.0 Exhaust System

The exhaust system remained attached with all 4 exhaust pipes showing signs of impact.

2.0 Cylinders and Valve Train

The rocker box covers were removed, and no anomalies were noted on cylinders Nos. 2, 3, and 4. Cylinder No. 1 showed signs of impact damage (photograph 3). Crankshaft continuity was confirmed to the accessory section and valvetrain continuity was confirmed by rotating the propeller by hand. The top spark plugs were removed and thumb compression and suction was observed on all cylinders when the crankshaft was rotated. The cylinders were examined by borescope and no anomalies were noted.



Photograph 3 – Cylinder No. 1

3.0 Induction System

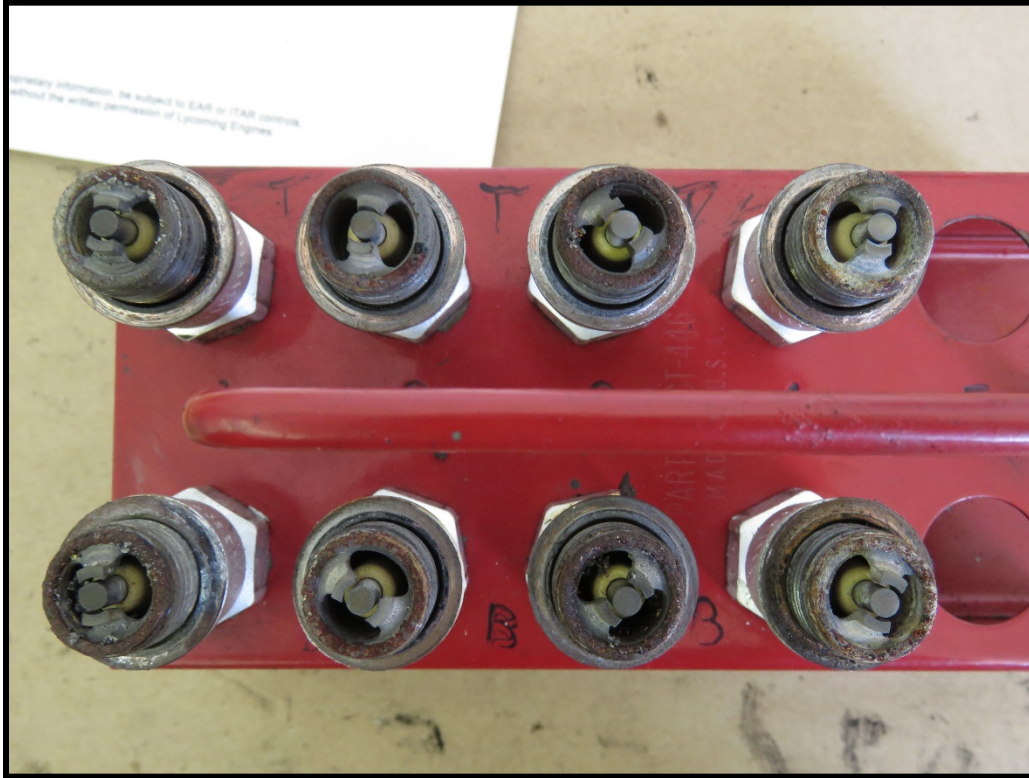
The air filter box (photograph 4) showed signs of impact damage. The air filter was found clear of debris and free of obstructions.



Photograph 4 – Air Filter

4.0 Spark Plugs

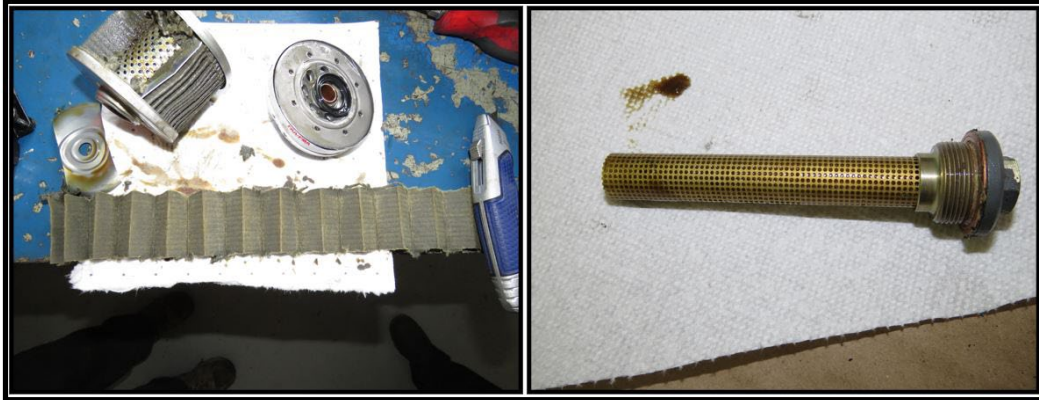
All spark plugs were removed from the engine (photograph 5). The spark plugs were massive electrode type plugs. All spark plugs showed coloration consistent with normal engine operation and signs corrosion post accident rust.



Photograph 5 – Spark plugs

5.0 Oil System

The oil filter, oil filter base and dip stick were fractured from the engine. The oil filter was cut open and filter element was inspected. The filter was found free and clear of metal. (photograph 6). The oil suction screen was removed and found free and clear. The oil cooler unit remained intact and attached to the engine by its inlet and outlet hoses



Photograph 7 – Oil Filter and Oil Suction Screen

6.0 Magnetos

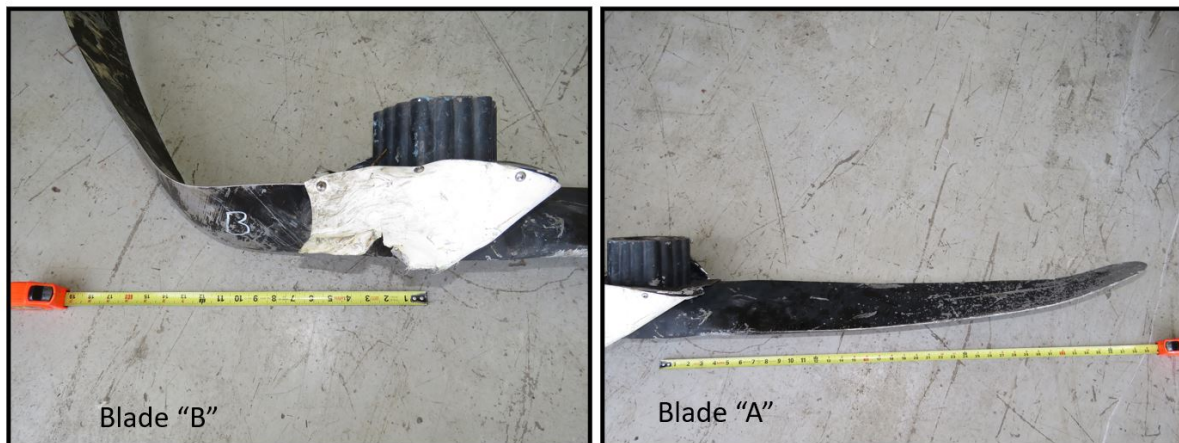
The right magneto remained attached to the engine and was removed. The left magneto was fractured from the engine and hanging from the ignition leads. Both magnetos were rotated by electric drill and spark was observed on all towers, water was observed in both magnetos



Photograph 7 – Left and Right Magnetos

7.0 Propeller

The propeller was labeled as an McCauley identified by P/N # 1C160DTM7553. The propeller showed signs of impact damage to both ends. One blade was bent rearward about 80° (12 inches from the hub) and the other blade bent rearward about 10° (30 inches from the hub). Leading edge polishing, cordwise scratching, and leading edge gouges were observed on both blades.



Photograph 8 – Propeller Blades



Blade "B"



Blade "A"

Photograph 9 – Propeller Blades