

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR21LA030

## ENGINE EXAMINATION

Specialist's Field Notes

September 23, 2021

## **A. ACCIDENT**

Location: Las Vegas, NV  
Date: 10/29/2020  
Time: 0939 PDT  
Airplane: Cessna 310, N101G

## **B. SUMMARY**

### **LEFT ENGINE.**

**THE ENGINE SEPARATED FROM THE AIRFRAME UPON IMPACT; VISUAL EXAMINATION OF THE ENGINE REVEALED EXTENSIVE THERMAL AND IMPACT DAMAGES. IT ALSO REVEALED TWO HOLES IN THE CRANKCASE ABOVE CYLINDER # 3 AND CYLINDER # 4. BOTH MAGNETOS REMAINED ATTACHED TO ITS RESPECTIVE INSTALLATION POINTS, BUT THE IMPULSE COUPLING ASSEMBLY EXHIBITED EXTENSIVE THERMAL AND IMPACT DAMAGES AND COULD NOT BE TESTED FOR SPARKS. BOTH MAGNETOS WERE DISASSEMBLED, AND NO ANOMALIES WERE NOTED. THE IGNITION HARNESS REMAINED ATTACHED TO BOTH MAGNETOS AND TO EACH OF THE SPARK PLUGS; NO ANOMALIES WERE NOTED WITH THE IGNITION HARNESS. ALL THE SPARK PLUGS REMAINED INSTALLED IN THEIR RESPECTIVE CYLINDERS AND WERE UNDAMAGED. TOP SPARKPLUGS WERE REMOVED AND VISUALLY INSPECTED; ALL SPARK PLUGS WERE IN A NORMAL WORN-OUT CONDITION WHEN COMPARED TO CHAMPION AVIATION SERVICE MANUAL AV6-R. THE FUEL PUMP REMAINED ATTACHED TO ITS RESPECTIVE INSTALLATION POINT AND SUSTAINED DAMAGE CONSISTENT WITH IMPACT AND THERMAL DAMAGE; THE FUEL PUMP WAS REMOVED AND EXAMINED, AND THE FUEL DRIVE COUPLING WAS INTACT. DUE TO ITS DAMAGES, THE FUEL PUMP COULD NOT BE ROTATED BY HAND. THE OIL PUMP REMAINED SECURED TO ITS RESPECTIVE INSTALLATION POINT. THE OIL PUMP GEARS, AND THE HOUSING EXHIBITED THERMAL DAMAGES AND RUST SIGNATURES SINCE ENGINE WAS EXPOSED TO ELEMENTS FOLLOWING THE ACCIDENT. THERE WERE NO ANOMALIES NOTED WITH THE PUMP. THE STARTER REMAINED ATTACHED TO THE STARTER ADAPTER AND DISPLAYED IMPACT AND THERMAL DAMAGE. THE VACUUM PUMP WAS DISASSEMBLED, AND NO ANOMALIES WERE NOTED.**

**ALL SIX CYLINDERS REMAINED ATTACHED TO THE ENGINE AND SUSTAINED DAMAGES CONSISTENT WITH THE IMPACT AND THERMAL EXPOSURE. EACH CYLINDER WAS BORESCOPE THROUGH SPARK PLUGS**

**HOUSING AND INTAKE AND EXHAUST VALVE HEADS ON EACH CYLINDER DISPLAYED NORMAL OPERATING AND COMBUSTION SIGNATURES. TOP AND BOTTOM THROUGH BOLTS ON CYLINDER # 5 AS WELL AS TOP THROUGH BOLT ON CYLINDER #3 EXPOSED THREADS BETWEEN THE RESPECTIVE NUTS AND THE CORRESPONDING CYLINDER DECKS. ALL CONNECTING RODS REMAINED ATTACHED TO ITS RESPECTIVE JOURNALS, HOWEVER, # 2 CONNECTING ROD WAS BROKEN. ALL SIX PISTON FACES DISPLAYED NORMAL OPERATING AND COMBUSTION SIGNATURES AND ALL THE PISTON RINGS WERE UNDAMAGED AND FREE IN THEIR RESPECTIVE GROOVES.**

**ONCE THE CRANKCASE WAS OPEN, SIGNS OF FRETTING WERE PRESENT ON MAIN BEARING #2 AND # 3 AND NO INDICATION OF LUBRICATION WAS NOTED. # 2 MAIN BEARING WAS LATERALLY DISPLACED INDICATED THERE WAS SOME BEARING MOVEMENT.**

**THE THREE-BLADE PROPELLER SEPARATED AT THE CRANKSHAFT PROPELLER FLANGE. THE PROPELLER EXHIBITED SIGNS THAT NO POWER WAS DEVELOPING ON THAT ENGINE AT THE TIME OF THE IMPACT. TWO OF THE BLADES REMAINED STRAIGHT WITH NO BENDING OR TWISTING DEFORMATION. ONE BLADE WAS SLIGHTLY BEND DUE TO IMPACT.**

**RIGHT ENGINE.**

**THERE WERE SIGNATURES (INCLUDING THE VIDEO) THAT SHOWED THAT THE RIGHT ENGINE WAS PRODUCING POWER.**

End of Report  
Factual