



The National Transportation Safety Board

Office of Aviation Safety
Central Region
Memorandum for the Record
Engine Examination Findings
CEN19FA161
Butler Missouri
June 10, 2019

Both left and right engines were disassembled and examined on June 12-13, 2019, at a secure salvage facility in Rantoul, Kansas. The examinations were conducted under the supervision of the NTSB IIC. The FAA, Cessna, and P&W Canada participated.

Left Engine – PT6A-112 S/N 12389

- External Condition

The engine was clean. No impact dents were noted on either exhaust stacks.

- External Cases

The reduction gearbox (RGB) showed no visible damage. The exhaust duct had some compressive impact damage. No notable axial displacement of the RGB. The gas generator case and accessory gearbox showed no visible damage.

- Power Control and Reversing Linkages

The reversing linkage showed no visible damage. 2 eyebolts located on the fuel control (FCU) power control lever were bent slightly from impact damage.

- Pneumatic Lines

The compressor discharge air (P3) line was not damaged, and all connections were found secured. The power turbine control (Py) line was not damaged, and all connections were found secured.

- Chip Detectors and Filters

The reduction gearbox chip detector was found clean. The oil filter had no metallic debris present. The filter housing and residual oil were clean.

- Compressor Section

The compressor was free to rotate with no abnormal noises.

- Combustion Section

No visible damage.

- Turbine Section

All blades were in place on the compressor turbine. Scoring was present on the full circumference of the hub on the downstream side. The downstream faces of the blade fixings exhibited rubbing damage from contact with the adjacent power turbine vane ring baffle. The blade retaining rivets also showed rubbing damage. Some blade tip rubbing was visible on the compressor turbine shroud. The outer edges of the interstage baffle showed some rubbing damage, consistent with contact with the compressor turbine disk. The baffle also exhibited circular rubbing

between the 4 and 7 o'clock positions. Light static imprints could be seen which corresponded to the spacing of the power turbine blades. The power turbine shroud showed slight rubbing on the full circumference. All blades were in place on the power turbine. The power turbine hub showed scoring on its full circumference.

- Reduction Gearbox

No damage found.

- Accessory Gearbox

All gears were free to turn and continuity with the compressor assembly was present.

- Fuel System

No anomalies found.

- Air System

No anomalies found on the compressor bleed valve.

- Propellor Governor

No damage found and free to rotate.

- Overspeed Governor

No damage found and free to rotate. The speed setting lever was free to move.

Right Engine - PT6A-112 S/N 12387

- External Condition

The engine was clean. No impact dents were noted on either exhaust stacks. Both oil scavenge tubes were bent in the vicinity of the exhaust case.

- External Cases

The reduction gearbox (RGB) showed no visible damage. The exhaust duct had some compressive impact damage. No notable axial displacement. The gas generator case had compressive deformation adjacent to the firewall. The accessory gearbox showed no visible damage.

- Power Control and Reversing Linkages

The reversing linkage showed no visible damage and was free to move. All control rods to the FCU were in place and secure.

- Pneumatic Lines

The compressor discharge air (P3) line was not damaged, and all connections were found secured. The power turbine control (Py) line was not damaged, and all connections were found secured. The "B" nut at the FCU was found to a little less torqued but was secure.

- Chip Detectors and Filters

The reduction gearbox chip detector was found clean. The oil filter had no metallic debris present. The filter housing and residual oil were clean.

- Compressor Section

The compressor was free to rotate with no abnormal noises.

- Combustion Section

No visible damage.

- Turbine Section

The compressor turbine shroud had light rubbing damage. All blades were in place on the compressor turbine and intact. Slight scoring was present on the disk, corresponding with contact of power turbine blades. Circular scoring was also present. The interstage baffle showed slight scoring on its outer edge, corresponding with contact with the compressor turbine disk. Rubbing was found on the outer shroud and baffle, corresponding to contact with the power turbine disk. Slight rubbing was visible on the entire circumference of the power turbine shroud. All blades were in place on the power turbine and scoring was visible on the hub.

- Reduction Gearbox

No damage found.

- Accessory Gearbox

All gears were free to turn and continuity with the compressor assembly was present.

- Fuel System

No anomalies found.

- Air System

No anomalies found on the compressor bleed valve.

- Propellor Governor

No damage found and free to rotate.

- Overspeed Governor

No damage found and free to rotate. The speed setting lever was free to move.

Summary of Engine Examinations: No anomalies were found that could have prevented normal operation of either engine. Damages found were consistent with impact damage.

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