PROPELLER GOVERNOR INSPECTION SUPPLEMENT

Date of Accident: 8 May 2015

Location: Atlanta, GA

NTSB File No.: ERA15FA208

Aircraft: Piper PA-32R-300

Registration No.: N5802V

Serial No.: 32R-7780365

Operator: per FAA registry:

TLT and GGB LLC
141 E. Euclid Pkwy
Asheville, North Carolina 28804

Written by: Les Doud
Air Safety Investigator

Date: July 13, 2015

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ACCIDENT SYNOPSIS

According to the NTSB preliminary report, “On May 8, 2015, about 1010 eastern daylight time, a Piper PA-32R-300, N5802V, collided with a highway barrier during a forced landing attempt near Chamblee, Georgia. The commercial pilot three passengers were fatally injured and the airplane was destroyed. The airplane was registered to and operated by TLT and GGBB LLC. as a personal flight. Day, visual meteorological conditions prevailed for the flight, which operated on an instrument flight rules flight plan. The flight originated from Peachtree DeKalb Airport (PDK), Chamblee, Georgia, about 1008 eastern daylight time and was destined for University-Oxford Airport (UOX), Oxford, Mississippi.

A review of the air traffic control (ATC) transcript revealed that the pilot contacted clearance delivery for an IFR clearance. ATC provided the clearance, which included radar vectors, and "climb and maintain 3,000; expect 8,000 in 10 minutes." The pilot read back the clearance correctly, and confirmed that he had the most recent automatic terminal information service (ATIS), which was information "Whiskey." The pilot contacted ground control, and indicated that he was ready to taxi. Ground control instructed the pilot to taxi for runway 3R, via bravo, hold short 3L, and the pilot read back the instructions correctly. The pilot then contacted the tower controller informing them that he was holding short 3L and ready. The tower controller instructed the pilot to "fly heading 360 and cleared for takeoff." The pilot then questioned the controller regarding which runway to take off from and the controller cleared the pilot for takeoff from runway 3L. Approximately two minutes after departure the tower controller called the pilot to verify heading. The pilot responded "zero-two-victor, I'm having some problem climbing here." Followed by "zero-two-victor; were going down here at the intersection." This was the last transmission made by the pilot.

A witness stated that he was about 2,300 feet off the departure end of the runway. He stopped to look at the airplane because it was moving extremely slow and only 75-100 feet above ground level when it went over his head. He went on to say that the engine sounded normal and despite the slow speed the airplane was not "wobbling" left to right. He continued to watch the airplane as it flew out of his view.”

Aircraft Damage: Destroyed
Injuries: 4 on board, 4 fatal

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SUMMARY AND ANALYSIS OF FINDINGS

This report documents the functional test and teardown examination of a Hartzell F-4-11B propeller governor that was mounted on the accident airplane described in NTSB File No. ERA15FA208.

The subject governor was shipped to Hartzell Propeller Inc. in Piqua, OH for testing and examination in the Hartzell governor lab. The as-received governor was mounted to the Hartzell governor test stand and run through the standard factory acceptance test procedure for new or overhauled governors. The governor functioned normally and met all factory specifications except for the maximum RPM setting. The governor was then disassembled for visual examination of the governor components. There were no unserviceable conditions noted during the visual examination.

CONCLUSION

The as-received F-4-11B propeller governor functioned normally and met all factory specifications except for maximum RPM; the governor maximum RPM setting was 2660 RPM vs. a factory specification of 2555 +/- 10. The governor drive coupling showed some signs of sudden stoppage consistent with a propeller ground impact but it did not affect performance or functionality. There were no discrepancies noted that would prevent or degrade normal operation.

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Governor Functional Test and Teardown Report

Date of Investigation: 18 June, 2015

Location: Hartzell Propeller Inc. Piqua, OH

Governor Model: F-4-11B

Representatives:

Les Doud	Hartzell Propeller Inc.
Kyle Magoteaux	Hartzell Propeller Inc.
Brad Morton	Hartzell Propeller Inc.
Kim Edwards	FAA- Vandalia MIDO
Edmundo Rolon	FAA – Atlanta ACO ASI

General Comments:

The F-4-11B governor is a double capacity, pressure to increase pitch, non-feathering governor intended for use on a Lycoming IO-540-K1( ) engine with a standard AND20010 drive pad. The governor responds to a change in engine/propeller RPM by directing oil under pressure to the propeller hydraulic cylinder, or by releasing oil from the hydraulic cylinder to the drain. The change in oil volume in the hydraulic cylinder changes the propeller blade angle and returns the engine/propeller system RPM to the pilot selected RPM.

Application Data: (from Hartzell Manual 130B)

Model	High RPM +/- 10	Pressure Relief	Control Shaft Location	Internal Plug Location	Control Lever Angle	Drive Ratio/ Rotation	Application
F-4-11B	2555	275-300	90 CCW	B	38	0.947:1 CW	Piper PA-32-R-300

Service History:

	S/N	Date of manufacture	TTSN	TSO
Governor	B2183U	3/16/1977	Unknown	Unknown

There are no records that indicate the subject governor was returned to Hartzell for service, repair or overhaul.

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As Received Condition:

See Photos #1-3 for the as-received condition. The control arm and pump shaft moved freely by hand directly after removal from the shipping container.

Photo #1 – As-received

Photo #2 – Identifying tag signed by NTSB Investigator in Charge

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Photo #3 – Gasket/Screen as-received

Governor Mounting Surface and Gasket:

The mounting pad was undamaged and the gasket/screen did not have any contamination or foreign debris (See Photo #3).

Governor Functional Test:

The governor was mounted on the Hartzell governor test stand for a functional test as specified in Hartzell Manual 130B (see Photo #4). The governor was not flushed out prior to this test. A particle screen was positioned to capture all oil drained from or pumped out of the governor during the test. There was no foreign debris detected in the screen following the test. The following tests were run with the noted performance:

1. Pressure relief setting was 295 psi vs. a requirement of 275-300 psi.
2. Pump capacity flow rate was 9.84 quarts/min at 1750 vs. a requirement of 8-12 quarts/min.
3. Leakage rate was 3.25 oz./min vs. a maximum limit of 8 oz./min.
4. High RPM setting was 2660 RPM at 118°F oil temperature vs. a requirement of 2555 +/-10 RPM.

Although the high RPM setting was higher than factory specifications, it does not affect the governor performance. A higher than specified RPM setting indicates an adjustment was made to the governor high RPM stop while installed on the aircraft. This adjustment is typically described in the aircraft maintenance manual should an aircraft installation require it to reach rated RPM inflight. A governor RPM setting of 2660 is equivalent to 2808 engine/propeller RPM on the IO-540-K() series engine.

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Photo # 4 – Governor installed on Test Stand (fine screen not positioned yet)

Teardown Results:

There was no abnormal wear or any debris found on or in any components during the disassembly and inspection of the governor.

Pressure Relief Valve –	Serviceable, no discrepancies noted.
Control Arm/Head –	Serviceable, no discrepancies noted (see Photo #5).
Oil Pump –	Serviceable, no discrepancies noted (see Photo #6-7).
Spool –	Serviceable, no discrepancies noted (see Photo #8).
Flyweight Assembly –	Serviceable, no discrepancies noted (see Photo #9).
Drive Coupling –	Serviceable, wear on drive face showed some signs sudden stoppage (see Photo #10) consistent with propeller ground impact but does not affect functionality or performance.

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Photo #5 – Control Arm and Head

Photo #6 – Governor oil pump

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Photo #7 – Governor oil pump gears

Photo #8 – Governor spool

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Photo #9 – Flyweight Assembly

Photo #10 – Drive Coupling

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PHOTOGRAPHIC SUMMARY

NOTE: The following digital photographs are original and unedited and available on compact disc. The numbering sequence may not be chronological as some may have been deleted if out-of-focus, too dark, redundant, etc. Photos used in the text of this report are taken from photos on this list but may have been adjusted from the original. Modifications to images used in the report are limited to cropping, magnification, file compression, or enhancement of color, brightness, or contrast for the sole purpose to improve clarity of the report. No other alterations are permitted.

Picture File Name	Description
DSCN0512.JPG	As received condition #1
DSCN0513.JPG	As received condition #2
DSCN0514.JPG	As received condition #3
DSCN0515.JPG	Assembly P/N and S/N
DSCN0516.JPG	Gasket/Screen
DSCN0517.JPG	Shipping tags
DSCN0518.JPG	Inspection stamps on base and body
DSCN0519.JPG	Base and body P/N stamps
DSCN0520.JPG	Installed on governor test stand
DSCN0521.JPG	Pressure relief valve components
DSCN0522.JPG	Control arm
DSCN0523.JPG	Control head rack and spring
DSCN0524.JPG	Control head body
DSCN0525.JPG	Flyweight cavity
DSCN0526.JPG	Speeder spring and spool assembly
DSCN0527.JPG	Flyweight assembly
DSCN0528.JPG	Flyweight cup bottom wear surface
DSCN0529.JPG	Speeder spring and spool assembly #2
DSCN0531.JPG	Drive coupling
DSCN0532.JPG	Oil Pump
DSCN0533.JPG	Oil pump idler gear
DSCN0534.JPG	Oil pump gears
DSCN0535.JPG	Governor body, oil pump side
DSCN0536.JPG	Governor base, oil pump cavity
DSCN0537.JPG	Governor base, oil pump cavity #2 (cleaned/dry)
DSCN0538.JPG	Governor base, oil pump cavity #3 (cleaned/dry)
DSCN0539.JPG	Oil pump idler gear close-up
DSCN0540.JPG	Governor body, oil pump side #2
DSCN0541.JPG	Governor body, oil pump side #3 (w/ flash)
DSCN0542.JPG	Governor body, oil pump side #4 (w/ flash)