



Memorandum For Record

Timothy W. Monville
Sr. Air Safety Investigator
Eastern Region

Date: February 23, 2018
NTSB Accident Number: ERA17FA017

Narrative:

The rudder pedal assembly was separated but inspection revealed one cable remained attached which exhibited tension overload about 78 inches from the attach point. The left rudder cable weldment was bent and fractured and the cable was not attached to the rudder pedal assembly. The horizontal portion of the T-bar was fragmented from the T-bar bar assembly and was not located within the wreckage. Both stabilator control cables remained connected to the T-bar. One cable exhibited evidence of tension overload while the other cable remained attached to the separated weldment which was bent. The aileron balance cable exhibited evidence of tension overload (broomstraw), and both aileron primary control cables remained connected at the chains at the T-bar; however, the chain was off the sprocket and both cables exhibited evidence of tension overload (broomstraw). The engine primer was found unlocked but the lock pin was bent. The magneto switch which remained secured in the instrument panel was in the off position and the key was not in place.

Examination of the right wing revealed bulging of the fuel tank. The fuel pick-up screen was clean.

Examination of the No. 1 cylinder revealed the top studs were sheared, and the top aft thru bolt was missing. The top forward thru bolt was fractured but there was no nut on the fractured end. Both pushrod tubes and pushrods were separated, and heavy impact damage was noted to the leading edge of the cylinder; tree pieces were embedded into the cooling fins. The intake and exhaust flanges remained attached to the cylinder, but the intake and exhaust were separated. Impact damage was noted to the rocker boss. The No. 1 cylinder thru bolt was stretched and necked down.

Examination of the No. 2 cylinder revealed the attach fasteners were in-place, and impact damage was noted to the leading edge of the cylinder, with pieces of tree embedded into the cooling fins. The exhaust pushrod tube was in-place but impact damaged, while the intake

pushrod tube was separated. The bottom spark plug was not in position; the threads were noted to be damaged. The oil return line elbow and primer were fragmented from the cylinder head; the oil return line was impact damaged. The intake flange (1/2) remained attached, and the exhaust flange/exhaust remained attached and were impact damaged. The intake tube was missing, and the intake rocker boss leading edge was fractured and partially missing. The rocker boss was impact damaged and missing a section.

Examination of the No. 3 cylinder revealed all attach hardware were in-place. Impact damage was noted to the top/aft/ and upper portions of the cylinder with pieces of tree material embedded. Both pushrod tubes and pushrods were in-place but were impact damaged. The oil return elbow was separated from the cylinder head, but the tube was attached to the crankcase fitting. Impact damage was noted to the rocker box covers. The intake tube remained attached but was impact damaged. The exhaust flange and attach hardware were separated. The cylinder head was fragmented around the pushrod tube area.

Examination of the No. 4 cylinder revealed all attach hardware were in-place, but the cylinder was impact damaged on the inboard section. The intake and exhaust pushrod housings were impact damaged. The intake tube remained attached to the cylinder and oil sump, but was impact damaged. The exhaust flange/pipe was separated from the cylinder head. The oil return line remained attached but was impact damaged on the inboard section. The rocker cover flange was impact damaged on the top forward area of the cylinder head.

Examination of the spark plugs revealed all but the No. 2 cylinder top were Champion REM40E. The manufacturer of the No. 2 top spark plug was not determined. Examination of the spark plugs revealed:

No. 1 Top- Upper portion bent, normal color. Worn center electrode.

No. 2 Top-Upper portion and center electrode missing.

No. 3 Top-Upper portion missing, normal color. Center electrode worn.

No. 4 Top-Intact. Ground and center electrodes worn, normal color.

No. 1 Bottom- Upper part missing, normal color. Center and ground electrodes worn.

No. 2 Bottom- Missing from Cylinder but recovered. The plug was bent and the center and ground electrodes worn.

No. 3 Bottom-Normal color. Center and ground electrodes worn.

No. 4 Bottom-Oil soaked. Center and ground electrodes worn.