



The National Transportation Safety Board

Office of Aviation Safety
Central Region
Memorandum for the Record
Maintenance Logbook
Review
CEN19LA224
Osceola Wisconsin
July 14 2019

A review of the maintenance logbooks was conducted, focusing on the failed stabilizer.

- In general, the records indicated that the stabilizer assembly was removed for inspection, refurbished, and replaced multiple times. The most recent maintenance was performed on March 1, 2019, when new sleeves for the forward attach points were fabricated and installed on the stabilizer assembly.
- Summary of stabilizer maintenance:

2-1-2001 AFTT 5188 Airframe log "Prepare fuselage and tail surfaces for recover, replace one horizontal stabilizer with new, recover, assemble and return to service."

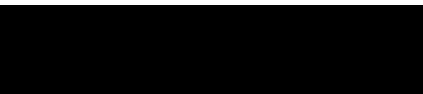
3-31-2011 AFTT 6276 Airframe log "Removed and installed serviceable stab trim screw and yolk assembly, IAW Piper maintenance manual"

2-20-2017 AFTT 6808 Airframe log "Repaired cracked fuselage longeron left side forward of stabilizer attach fitting. Removed LH horizontal stab for access and repaired... Reinstalled stabilizer IAW PA-18 MM."

3-1-2019 AFTT 6989 Inspection report "Bushed horizontal stab and trim yolk." "Routine maintenance, remove horizontal stab, inspect attach points, fabricate sleeves for forward attach points assemble stab with new sleeves, fabricate and installed new bushing for stab yolk, "

Photos of record entries are attached to this memo.

Alexander Lemishko



Senior Air Safety Investigator
NTSB Central Region Aviation

MAINTENANCE RECORD

E	INSPECTION — MAINTENANCE — REPAIRS — ALTERATIONS	MECHANIC'S SIGNATURE	LICENSE NUMBER
10/7/00	Tach 5178 - REPLACED TIRE & BEARINGS ON TAIL WHEEL - [REDACTED]		
1/4/00	- Remained stationary next to [REDACTED] [REDACTED]		
11/01	AIRCRAFT WAS DISSASSEMBLED FOR FUSELAGE, TAIL SURFACES AND LANDING GEAR RECOVER. FUSELAGE WAS SANDBLASTED. REPLACED LOWER LONGERONS. REPLACED TUBING IN TAIL OF FUSELAGE. REPLACED OVERHEAD BIRDCAGE STRUCTURE. WELDED NEW TAIL WHEEL BRACKET. POWDERCOATED ALL ASSEMBLIES. TAIL SURFACES. REPLACED RUSTED AND DAMAGED TUBING IN RUDDER AND ELEVATORS. REPLACED ONE HORIZONTAL STAB WITH NEW PMA UNIT FROM AIRFRAMES INC. SANDBLASTED INSPECTED AND POWDERCOATED TAIL SURFACES. LANDING GEAR. CLEANED, SANDBLASTED POWDERCOATED. REPLACED BRAKE LINES. ALL ASSEMBLIES HAVE BEEN INSPECTED AND APPROVED FOR RECOVER ON THIS DATE-END - [REDACTED]		

YEAR: _____ DATE	RECORDING TACH TIME	TODAY'S FLIGHT	TOTAL TIME IN SERVICE	Description of Inspections, Tests, Repairs and Alterations Entries must be endorsed with Name, Rating and Certificate Number of Technician or Repair Facility. (See back pages for other specific entries.)
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02/20/2017

Aircraft total time 6808.5 Tach 6808.5

Repaired cracked fuselage longeron left side forward of stabilizer attach fitting. Removed LH horizontal stab for access and repaired by inserting inner tube and welding IAW AC43.131B Chapter 4-95.
Reinstalled stabilizer IAW PA-18 MM. Faa 337 form completed. Weight and balance check completed.

2-20-2017	6808.5	6808.5	Removed and Replaced Gear to fuselage attachment Bolts (4) PN AN6-26 IAW Piper PA-18 Maintenance manual
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3-1
Date: ~~4-1~~ 2019

Tach: 6989

AFTT: 6989

Performed annual [REDACTED]
inspection IAW FAR 43 APDX D "scope and detail "
Checked AD's thru this date, see compliance report for
recurring AD's, inspected the ELT system in this aircraft
according to applicable aircraft and ELT manufactures
instructions and applicable FAA guidance and found that it
meets the requirements of section 91.207(d). Installed new
brake rotors and brake pads, installed new lock plate and pawl
in tail wheel assembly, serviced brakes, cleaned and packed tail
wheel swivel and MEG bearings, I certify that this aircraft was
inspected in accordance with an annual inspection as per
manufactures maintenance manual and FAR 43 Apdx.
"D" and was determined to be in an airworthy condition.
[REDACTED]

Tests, Repairs and Alterations

(Name, Rating and Certificate Number of Technician or Repair
specific entries.)

Date: 3-31-2011

Tach: 6276

AFTT: 6276

Performed annual inspection IAW FAR 43 apdx "D" scope and detail, Checked and C/W all AD's thru this date, Inspected the ELT system in this aircraft according to applicable Aircraft and ELT Manufacturer's instructions and applicable FAA guidance and found that it meets the requirements of section 91.207(d). Repaired cracks in left and right side of boot cowl IAW AC43 -13-1B, removed and installed serviceable stab trim screw and yoke assy, IAW piper maint manual, removed left fuel tank and welded two cracks IAW AC 43-13-1B, I certify that this aircraft was inspected in accordance with an annual inspection as per manufactures maintenance manual and FAR 43 Apdx. "D" and was determined to be in an airworthy condition.

Date: 1-7-20

Tach: 6354

AFTT: 6354

Performed inspection IAW FAR 43 apdx "D" scope and detail, Checked and C/W all AD's thru this date, Inspected the ELT system in this aircraft according to applicable Aircraft and ELT Manufacturer's instructions and applicable FAA guidance and found that it meets the requirements of section 91.207(d). Repaired cracks in left and right side of boot cowl IAW AC43 -13-1B, removed and installed serviceable stab trim screw and yoke assy, IAW piper maint manual, removed left fuel tank and welded two cracks IAW AC 43-13-1B, I certify that this aircraft was inspected in accordance with an annual inspection as per manufactures maintenance manual and FAR 43 Apdx. "D" and was determined to be in an airworthy condition.

FLIGHT TIME LOG

DATE	NATURE OF FLIGHT	FROM	TO	TOTAL TIME		PILOT
				HOURS	MIN.	
3/1/01	RECOVERED FUSELAGE, TAIL SURFACES AND LANDING GEAR USING COCONITE 101 AND RANDOLPH BUTYRATE ROPE FINNISH. RECOVER WAS DONE L.A.W. COCONITE S.T.C. 337 WITH AIRCRAFT PAPERWORK.					
4/24/01	AIRCRAFT WAS ASSEMBLED AND RIGGED PER PIPER INSTRUCTIONS.					
186.AA	THE FUSELAGE WAS ASSEMBLED WITH NEW CONTROL CABLES, FLOOR					
TRCH	BOARDS, PULLYS, INTERIOR SIDE PANELS, NEW HARDWARE. ALL STEEL PARTS, RUDDER PEDALS, TORQUE TUBE, STICKS, SEATS, FLAP HANDLES WERE SANDBLASTED AND POWDER COATED, ALL CONTROL SYSTEMS INSTALLED WITH NEW HARDWARE. INSTALLED RED VICT TACH AND NEW MANIFOLD PRESSURE GAUGE, REWIRED AIRCRAFT ELECTRICAL, REBUILT AIRCRAFT BRAKES. INSTALLED LANDING GEAR WITH NEW HARDWARE, NEW SHOCK COILS AND HYDRO PNEUMATIC SHOCKS. INSTALLED WINGS AND STRUTS, CHECKED RIGG PER PIPER INSTRUCTIONS.					
	- CONTINUED ON NEXT PAGE					
				BROUGHT FORWARD		
				TOTALS TO DATE		

INSPECTION REPORT

This form meets requirements of FAR Part 43

Make	Model	Serial #	Registration #
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- ☒ ANNUAL INSPECTION
☐ 100 HOUR INSPECTION

HOBBS/TACH 6989
 ELT DUE 2-2020

A. PROPELLER GROUP

- ☐ Make _____
☐ M/N _____
☐ S/N _____
- ☐ 1. Inspect spinner and back plate
 - ☐ 2. Check spinner mounting brackets
 - ☒ 3. Check propeller mounting bolts and safety (Check torque if safety is broken.)
 - ☒ 4. Inspect blades for nicks and cracks
 - ☒ 5. Dress prop
 - ☐ 6. Check for grease and oil leaks
 - ☐ 7. Inspect hub parts for cracks and corrosion
 - ☐ 8. Check pitch actuating arms and bolts
 - ☐ 9. Rotate blades and check for tightness in hub pilot tube
 - ☐ 10. Inspect governor for oil leaks and security
 - ☐ 11. Check nitrogen accumulator (if equipped)
 - ☐ 12. Check de-ice for abrasion and operation
 - ☐ 13. Check de-ice brushes and contact ring
 - ☐ 14. Lubricate

A _____
 B _____
 C _____

B. ENGINE GROUP (Engine # 1)

Note: If more than one engine, see attachment

CAUTION: Ground Magneto Primary Circuit before working on engine.

- ☐ Make _____
☐ M/N _____
☐ S/N _____
- ☐ 1. Run up engine and check engine gauges
 - ☐ 2. Remove engine cowl
 - ☒ 3. Compression Check
 Cyl #1 78/80 Cyl #2 72/80 Cyl #3 80/80
 Cyl #4 78/80 Cyl #5 78/80 Cyl #6 78/80
 - ☒ 4. Drain oil sump
 - ☐ 5. Clean suction oil strainer at oil change (Check strainer for foreign particles)
 - ☐ 6. Clean pressure oil strainer or change full flow (cartridge type) oil filter element (Check strainer or element for foreign particles)
 - ☒ 7. Check oil temperature sender unit for leaks and security
 - ☒ 8. Check oil lines and fittings for leaks, security, chafing, dents and cracks
 - ☒ 9. Clean and check oil radiator cooling fins
 - ☒ 10. Fill engine with oil
 - ☒ 11. Check condition of spark plugs (Clean and adjust gap as required)

- ☒ 12. Check ignition harnesses and insulators (High tension leakage and continuity)
- ☐ 13. Check magneto main points for clearance
- ☐ 14. Check magneto for oil seal leakage
- ☐ 15. Check breaker felts for proper lubrication
- ☐ 16. Check distributor block for cracks, burned areas or corrosion and height of contact springs
- ☒ 17. Check magnetos to engine timing
- ☒ 18. Remove air cleaner screen and clean
- ☐ 19. Drain carburetor and remove and clean carburetor inlet screen or remove and clean fuel injector inlet screen (Clean injector nozzles as required) (Clean with acetone only.)
- ☒ 20. Check condition of carburetor heat or alternate air door and box
- ☒ 21. Check intake seals for leaks and clamps for tightness
- ☒ 22. Inspect condition of flexible fuel lines
- ☒ 23. Check fuel system for leaks
- ☒ 24. Inspect and lubricate fuel selector valve
- ☐ 25. Clean screens in electric fuel pump(s) (Plunger type pump)
- ☐ 26. Check fuel pumps for operation (engine driven and electric)
- ☒ 27. Check vacuum pump and lines
- ☒ 28. Check throttle, carburetor heat or alternate air, mixture and propeller governor controls for travel and operating condition
- ☒ 29. Inspect exhaust stacks, connections and gaskets
- ☒ 30. Inspect muffler, heat exchanger and baffles
- ☒ 31. Check breather tube for obstructions and security
- ☒ 32. Check crankcase seam bolts
- ☒ 33. Check engine mounts for cracks and loose mounting
- ☒ 34. Check rubber engine mount bushings for deterioration
- ☒ 35. Check all engine baffles
- ☒ 36. Check fire wall for cracks
- ☒ 37. Check fire wall seals
- ☒ 38. Check condition and tension of generator or alternator drive belt or bushings
- ☒ 39. Check condition of generator or alternator and starter
- ☒ 40. Lubricate all controls
- ☒ 41. Clean and check cowling for cracks, distortion and loose or missing fasteners
- ☐ 42. Clean engine
- ☒ 43. Reinstall engine cowl

A _____
 B repair cyl #3 primer lines
 C _____
 D _____
 E _____
 F _____

C. CABIN GROUP

- ☒ 1. Inspect cabin entrance, door and windows for damage and operation
 - ☒ 2. Check upholstery for tears
 - ☒ 3. Check seats, seat belts, securing brackets and bolts
 - ☒ 4. Check trim operation
 - ☒ 5. Check rudder pedals, brake pedals and cylinders for operation and leaks
 - ☒ 6. Check parking brake
 - ☒ 7. Check control wheels, column, pulleys and cables
 - ☒ 8. Check landing, navigation, cabin and Instrument lights
 - ☐ 9. Check Pitot heat, de-ice light
 - ☒ 10. Check instruments, lines and attachments
 - ☒ 11. Check instruments central air filter lines and replace filter
 - ☒ 12. Check condition of vacuum operated instruments and operation of electric turn and bank
 - ☐ 13. Replace vacuum regulator filter
 - ☐ 14. Replace filters, if equipped, in gyro horizon and directional gyro
 - ☐ 15. Check altimeter (Calibrate altimeter system in accordance with FAR 91.170, if appropriate)
 - ☒ 16. Pitot static check due: 3-2019
 - ☒ 17. Check ELT operational
- A Trim yoke worn ✓
- B _____

D. FUSELAGE AND EMPENNAGE GROUP

- ☒ 1. Remove inspection panels and plates
 - ☒ 2. Check fluid in brake reservoir
 - ☐ 3. Check hydraulic reservoir for landing gear
 - ☒ 4. Check battery, box and cables
 - ☒ 5. Check electronic installations
 - ☒ 6. Check bulkheads and stringers for damage
 - ☒ 7. Check loop and loop mount, antenna mount and electric wiring
 - ☒ 8. Remove, drain and clean fuel filter bowl and screen.
 - ☒ 9. Check fuel lines, valves and gauges for damage and operation
 - ☒ 10. Check security of all lines
 - ☒ 11. Check stabilator for security of mounting
 - ☒ 12. Check elevation bearings, bungee and horns for damage and operation
 - ☒ 13. Check fin and rudder surfaces for damages
 - ☒ 14. Check rudder and tab hinges, horns and attachments for security, damage and operation
 - ☒ 15. Check rudder trim mechanism operation
 - ☒ 16. Check aileron, rudder, stabilator and trim cables for correct cable tension, and turnbuckles, guides and pulleys for damage, operation and safeties
 - ☐ 17. Check rotating beacon for wear, etc.
 - ☒ 18. Lubricate pulleys and hinges
 - ☒ 19. Reinstall inspection panels and plates
- A Bushed horizontal stab & trim yoke
- B replaced brake pads & rotors
- C _____
- D _____

E. WING GROUP

- ☒ 1. Remove inspection plates and fairings
 - ☒ 2. Check wing, aileron and flap surfaces for damage and loose rivets, and condition of wing tips
 - ☐ 3. Check condition of walkway
 - ☒ 4. Check aileron attachments and hinges for damage, looseness and operation
 - ☒ 5. Check aileron cables for correct tension, pulleys, bellcranks and control rods for corrosion, damage and operation
 - ☒ 6. Check flap attachments and hinges, or tracks, and rollers for damage, looseness and operation. Clean tracks and rollers
 - ☒ 7. Check flap cables, pulleys, step lock, bellcranks and rods for corrosion, damage and operation
 - ☒ 8. Lubricate hinges and pulleys
 - ☒ 9. Check wing attachment bolts and brackets
 - ☒ 10. Check fuel tanks and lines for leaks and water
 - ☒ 11. Fuel tanks marked for capacity
 - ☒ 12. Fuel tanks marked for min. octane rating
 - ☒ 13. Check switches to indicators registering fuel tank quantify
 - ☒ 14. Check fuel cell vents
 - ☒ 15. Check thermos type fuel cap rubber seals for brittleness and deterioration
 - ☒ 16. Reinstall inspection plates and fairings
- A _____
- B _____
- C _____
- D _____
- E _____

F. LANDING GEAR GROUP

- ☒ 1. Remove wheel pants and check for cracks
- ☐ 2. Check oleo struts for proper extension (Check for proper fluid level as required)
- ☐ 3. Check nosegear torquelinks and shimmy damper
- ☐ 4. Check nose gear steering control
- ☒ 5. Put airplane on jacks
- ☒ 6. Check wheels for alignment
- ☒ 7. Check tires for cuts, uneven or excessive wear and slippage
- ☒ 8. Remove wheels, clean, check and re-pack bearings ..
- ☒ 9. Check wheels for cracks, corrosion and broken bolts.
- ☒ 10. Check tire pressure
- ☒ 11. Check brake lining and disc
- ☒ 12. Check brake backing plates
- ☒ 13. Check brake lines
- ☒ 14. Check shimmy damper
- ☐ 15. Check gear forks for damage
- ☐ 16. Check oleo struts, attachments, torque links, retraction links and bolts for operation
- ☐ 17. Check torque link bolts and brushings
- ☐ 18. Check drag link bolts
- ☐ 19. Check gear doors and attachments
- ☐ 20. Check warning horn and light for operation
- ☐ 21. Retract gear - Check operation
- ☐ 22. Retract gear - Check doors for clearance and operation
- ☐ 23. Check emergency operation of gear
- ☐ 24. Check landing gear motor
- ☒ 25. Check anti-retraction system

- ☐ 26. Check position indicating switches and electrical leads for security
- ☐ 27. Lubricate
- ☐ 28. Remove airplane from jacks

A Colors of Bungees: Black/Green

B _____

C _____

D _____

G. OPERATIONAL INSPECTION

- ☐ 1. Check fuel pump and fuel tank selector
- ☐ 2. Check fuel quantity and pressure or flow
- ☐ 3. Check oil pressure and temperature....
- ☐ 4. Check generator or alternator output
- ☐ 5. Check manifold pressure
- ☐ 6. Check carburetor heat or alternate air
- ☐ 7. Check brakes
- ☐ 8. Check vacuum gauge
- ☐ 9. Check gyros for noise and roughness
- ☐ 10. Check cabin heat operation
- ☐ 11. Check magneto switch operation
- ☐ 12. Check magneto RPM variation
- ☐ 13. Check throttle and mixture operation
- ☐ 14. Check engine Idle
- ☐ 15. Check propeller smoothness
- ☐ 16. Check propeller governor action
- ☐ 17. Check electronic equipment operation
- ☐ 18. Check operation of controls
- ☐ 19. Check operation of flaps
- ☐ 20. Check de-ice wing boots

A _____

B _____

C _____

D _____

H. GENERAL

- ☒ 1. Aircraft conforms to FAA Specifications
- ☐ 2. All Manufacturers Service Letter and Bulletins complied with
- ☒ 3. Check for proper Flight Manual
- ☒ 4. All FAA Airworthiness Directives complied with

A _____

B _____

I. Other

- ☒ Airworthiness Certificate
- ☐ Radio License
- ☒ Registration
- ☒ Operating handbook
- ☒ Weight and balance

Aircraft

☐ Make _____

☐ Model _____

☐ S/N _____

Registered owner

☐ Name _____

☐ Address _____

J. Appliances

A. Magnetos

Right Mag	Left Mag
Make _____	Make _____
M/N _____	M/N _____
S/N _____	S/N _____

B Carb/Fuel injection

Make _____

M/N _____

S/N _____

Other markings _____

C Vacuum pump

Make _____

M/N _____

S/N _____

D. Air filter

Make _____

S/N _____

Attachments

- ☐ 1. Second Engine
- ☐ 2. Turbocharger group
- ☐ 3. Other _____

Signature of Mechanic or Inspector

[Redacted Signature Area]