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Date: June 3, 2024

Subject: ERA23LA264, Maintenance Records Review

Contact: NA

As part of the investigation, the complete engine maintenance records were requested from the insurance adjuster for review by NTSB. The provided engine maintenance records contained entries in the first engine logbook beginning July 19, 1966 to the last entry dated April 14, 1983, while the second engine logbook contained entries beginning May 3, 1984, to the last entry dated April 4, 2023 associated with a 100-Hour/Annual inspection accomplished in accordance with 14 *Code of Federal Regulations* Part 43 Appendix D¹.

Review of the engine maintenance records revealed the following:

¹ The accident was on May 21, 2023. The recorded hour meter and tachometer readings on April 4, 2023 were 945.8 and 3,222,92.

April 10, 1978 - Engine overhauled. New exhaust valve guides and exhaust valves installed - Tach 1315.2 (Figure 1).

[illegible]

Figure 1: Entry April 10, 1978 for Engine Overhaul.

May 3, 1984 - Installed new #2 cylinder exhaust valve and guide - Tach 1594.47 (Figure 2).

INSPECTION & MAINTENANCE RECORD		
DATE	TOTAL TIME	INSPECTION OR MAINTENANCE PERFORMED AGENCY & CERTIFICATE NO.
5-3-84	Tach	1594.47 New Log Started This Date DRAINED OIL & CLEANED SCREENS. FILLED WITH 7QTS Aeroshell 100W. Compression 180/19 280/10 380/14 480/10. REMOVED #2 CYLINDER. INSTALLED NEW EXHAUST VALVE & GUIDE. REINSTALLED CYL USING NEW RINGS & GASKETS. REPAIRED CRACK IN EXHAUST STACK.
DATE <u>5-3-84</u> AIRCRAFT TIME <u>Tach 1594.47</u> ENGINE TIME <u>1594.47</u> I CERTIFY THAT THIS <u>Engine</u> HAS BEEN INSPECTED IN ACCORDANCE WITH <u>FAA</u> INSPECTION PROCEDURES AND IS APPROVED FOR RETURN TO SERVICE AIRWORTHINESS DIRECTIVE LISTING IN BACK OF LOG. PERTINENT DETAILS OF WORK PERFORMED ON FILE AT EXHIBIT <u>1A</u> ORLANDO, FL UNDER REPAIR ORDER <u>[REDACTED]</u>		

Figure 2: Entry May 3, 1984 Showing Installation of New Exhaust Valve and Guide in No. 2 Cylinder.

March 15, 1989 - No. 2 cylinder removed due to broken piston ring. New valve guides installed and valves resurfaced - Tach 2012.00 (Figure 3).

INSPECTION & MAINTENANCE RECORD		
DATE	TOTAL TIME	INSPECTION OR MAINTENANCE PERFORMED AGENCY & CERTIFICATE NO.
3-15-89	2012.00	Removed #2 Cylinder - Had broken Ring - had Cylinder overhauled by Southeast Engine overhaul in Jeffersonville - Chromed Cylinder, New Valve Guides, resurfaced valves - New Piston, New Piston Ring, wrist Pin New. Also repositioned injectors installed 8 new Champion Spark Plugs and new Delco Magneto Harness. Installed 4 Blow proof Exhaust Caskets.
		Replaced Oil and Filter - using 8 quarts of Mineral oil for break-in.
		Tested Engine in Air @ 6500' @ 75% Power For One hour. Rebuilt on ground - no problem found.
		[REDACTED] S.A.P. [REDACTED]

Figure 3: Entry March 15, 1989 for No. 2 Cylinder Overhaul with New Valve Guides and Resurfaced Valves.

April 4, 2023 - Engine 100-Hour/Annual Inspection Tachometer Reading 3,222.92 (Figure 4).

INSPECTION & MAINTENANCE RECORD	
DATE	Xpress Aircraft Maintenance LLC. [REDACTED] Knoxville TN [REDACTED] N9139J Engine Entry Date 4/4/2023 Hobbs: 945.8 TACH: 3222.92 Lycoming O-360-A3A S/N L-9429-36A TSO: 1902.99 C/W 100hr/Annual Inspection IAW FAR 43.D. C/W Compression check, #1 76/80; #2 74/80; #3 69/80; #4 68/80 MOR 44/80. Drained oil and removed oil filter. Cut & inspected oil filter, no defects noted. Installed new Tempest oil filter P/N AA48110-2 and serviced sump with 7 quarts XC20W50. R2 spark plugs w/new UREM40E. Set mags to engine timing. R2 Intake hoses w/new P/N 69603 & intake gaskets w/new 71973. Ground ran. Operational & leak check good. I CERTIFY THIS ENGINE IS IN AIRWORTHY CONDITION IN REGARDS TO WORK PERFORMED AND IS APPROVED FOR RETURN TO SERVICE. Ryan Adam Bratcher A&P [REDACTED] IA
	Xpress Aircraft Maintenance LLC. [REDACTED] Knoxville TN [REDACTED] N9139J Propeller Entry Date 4/4/2023 Hobbs: 945.8 TACH: 3222.92 Sensenich M76EM85-0-60 S/N 11332K C/W 100hr/Annual Inspection IAW FAR 43.D. Dressed Prop as needed. I CERTIFY THIS PROPELLER IS IN AIRWORTHY CONDITION IN REGARDS TO WORK PERFORMED AND IS APPROVED FOR RETURN TO SERVICE. Ryan Adam Bratcher A&P [REDACTED] IA

Figure 4: Entry April 4, 2023 For Last 100-Hour/Annual Inspection of the Engine Assembly.

May 21, 2023 - Post Accident Tachometer Reading 3229.80 (Figure 5).



Figure 5: View of the Engine Tachometer Post Accident. Photograph Provided by the Insurance Adjuster.

Thus, the engine had about 1,915 hours and 45 years since engine overhaul, 1,635 hours and 39 years since the #2 exhaust valve was replaced, and 1,218 hours and 34 years since the valve guides were replaced.