



Report of the Month

This Lycoming IO-540 has a problem. What is it?

To learn where the elements are coming from, [click here](#) and scroll down.

UNIT	MAKE/MODEL: Lycoming IO-540-K1G5	OIL TYPE & GRADE: Aeroshell 15W/50
	FUEL TYPE: Gasoline (Leaded)	OIL USE INTERVAL: 31 Hours
	ADDITIONAL INFO: Piper PA32R	

COMMENTS	Thanks for letting us know what you found and were able to fix the issue with the alternate air door! Doing that looks to have helped wear, and there's no evidence of long-term damage. We left the mark on chrome since it was 18 ppm last time, but this level isn't unusual for your plane. As long as it at least holds steady, we won't worry about it and will probably remove the mark next time. Silicon is still a touch high, but it's improving, and we'll see if it continues to do so in the next sample. Unless it starts going back up again, we also won't get too concerned.
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	MI/HR on Oil	31	UNIT / LOCATION AVERAGES					UNIVERSAL AVERAGES	
	MI/HR on Unit	719	33	33	41	33	48		
	Sample Date	11/23/2021	10/21/2021	3/19/2021	9/8/2020	6/16/2020	1/23/2020		
	Make Up Oil Added	3 qts	3 qts	3 qts	2 qts	1 qt	2 qts		
ELEMENTS IN PARTS PER MILLION	ALUMINUM	8	9	15	5	9	8	17	7
	CHROMIUM	12	11	18	6	11	10	14	4
	IRON	40	39	65	26	41	35	51	30
	COPPER	9	12	10	10	14	11	18	8
	LEAD	3828	4871	4800	3921	5850	4745	6009	4143
	TIN	2	2	2	1	2	2	2	1
	MOLYBDENUM	0	0	0	0	0	0	0	0
	NICKEL	2	2	3	1	2	2	4	2
	MANGANESE	0	0	1	0	0	0	1	0
	SILVER	0	0	0	0	0	0	0	0
	TITANIUM	0	0	0	0	0	0	0	0
	POTASSIUM	0	0	0	0	0	1	1	1
	BORON	0	1	0	0	0	1	2	1
	SILICON	15	8	20	3	6	8	6	6
	SODIUM	2	2	1	2	3	2	2	1
	CALCIUM	29	7	60	1	1	1	3	17
	MAGNESIUM	4	8	7	5	7	9	16	6
	PHOSPHORUS	998	1194	262	1196	1275	1253	1250	724
ZINC	16	21	19	13	23	18	37	8	
BARIUM	0	0	0	0	0	0	0	0	

Values Should Be*

PROPERTIES	SUS Viscosity @ 210°F	94.1	82-105	97.4	90.3	93.7	93.8	89.7
	cSt Viscosity @ 100°C	18.96	16.0-21.8	19.75	18.05	18.87	18.90	17.90
	Flashpoint in °F	480	>440	470	480	480	480	485
	Fuel %	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5
	Antifreeze %	-	-	-	-	-	-	-
	Water %	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Insolubles %	0.3	<0.6	0.4	0.1	0.3	0.4	0.4
	TBN							
	TAN							
	ISO Code							

When the owner saw the high silicon and read the report from October 2021, he took our advice and checked the air filtration system and alternate air door. It wasn't closed all the way, and it was letting unfiltered air into the system. Check out the improvements after he fixed it - not only did silicon drop, but wear improved too. He mentioned that if it hadn't been for this report, he never would have thought to look at it.