

Report of the Month

What went wrong with this IO-540?

To learn more about where the elements are coming from, [click here](#).

ELEMENTS IN PARTS PER MILLION	MI/HR on Oil	18	UNIT/ LOCATION AVERAGES	26	39	50	49	UNIVERSAL AVERAGES
	MI/HR on Unit	895		838	845	767	697	
	Sample Date	03/31/13		07/23/12	06/19/12	12/23/11	09/26/11	
ALUMINUM	8	13	17	27	21	10	8	
CHROME	5	7	3	5	5	2	4	
IRON	20	46	35	59	62	42	29	
COPPER	20	17	16	19	15	15	9	
LEAD	2294	5578	4573	6101	7654	6190	4256	
TIN	1	3	4	0	6	3	1	
MOLYBDENUM	0	0	1	0	0	0	0	
NICKEL	2	3	2	3	3	2	2	
PO TASSIUM	0	1	0	1	1	0	0	
BORON	1	1	3	1	3	4	0	
SILICON	9	7	6	10	8	6	6	
SODIUM	2	1	1	0	2	1	1	
CALCIUM	2	3	1	1	0	1	5	
MAGNESIUM	5	12	11	17	19	15	5	
PHOSPHORUS	35	611	1063	1024	1236	1085	823	
ZINC	3	5	6	6	5	4	8	
BARIUM	0	0	0	0	0	0	0	

Values
Should Be*

PROPERTIES	SUS Viscosity @210°F	94.5	82-105	94.4	92.2	99.8	101.2
	cSt Viscosity @ 100°C	19.05	16.0-21.8	19.03	18.50	20.30	20.64
	Flashpoint in °F	505	>440	470	475	500	460
	Fuel %	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
	Antifreeze %	-	-	-	-	-	-
	Water %	0.0	0.1	0.0	0.0	0.0	0.0
	Insolubles %	0.7	<0.6	0.4	0.5	0.5	0.2
	TBN						
	TAN						
ISO Code							

*THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

This engine had a problem with severe case fretting. The case had something like 900 hours on it when the trouble started. It had been purchased from a reputable company as a rebuild, and in 2011/2012 they noticed aluminum starting to go up in their reports. Soon after the July 2012 report they noticed a puddle of oil under the airplane. It was leaking sufficiently that they didn't feel it was safe to fly, so they shipped it back to the place that had rebuilt it and found it was fretted beyond repair. They ended up working out a deal to have the problem fixed and the bottom half of the engine rebuilt. An expensive fix, but the good news is, the engine is now back in the air and running well.