

Report of the Month

This GTSIO-520 is no longer flying. What happened?

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

ELEMENTS IN PARTS PER MILLION	MI/HR on Oil	22	UNIT/ LOCATION AVERAGES				UNIVERSAL AVERAGES
	MI/HR on Unit	115					
	Sample Date	10/11/12					
	ALUMINUM	29	23				5
	CHROME	8	12				7
	IRON	56	74				45
	COPPER	8	9				4
	LEAD	2732	2658				4578
	TIN	8	4				1
	MO LYBDENUM	10	9				3
	NICKEL	39	31				15
	POTASSIUM	0	0				1
	BORON	1	1				0
	SILICON	11	8				6
	SODIUM	0	0				1
CALCIUM	87	84				12	
MAGNESIUM	5	4				1	
PHOSPHORUS	88	93				217	
ZINC	7	5				6	
BARIUM	0	0				0	

Values
Should Be*

PROPERTIES	SUS Viscosity @210°F	86.4	82-105			
	cSt Viscosity @ 100°C	17.10	16.0-21.8			
	Flashpoint in °F	470	>430			
	Fuel %	<0.5	<1.0			
	Antifreeze %	-	-			
	Water %	0.0	0.1			
	Insolubles %	0.3	<0.6			
	TBN					
	TAN					
	ISO Code					

*THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

This engine suffered a catastrophic bearing failure in flight after this sample was taken. Bearing problems can be hard to see in analysis because lead, the most prominent bearing metal, is obscured by 100LL from blow-by past the rings. Still, this engine was clearly not right. Copper and tin likely show bearing wear, and aluminum, iron, and nickel are also out of line. The crank had worn away the bearing completely and was eating into the case. The filter was full of metal from the failure. One speculation as to the cause of the failure is that this type of engine has an oil cooler, which can drain if the engine sits for a while, which this one did. You then have to prime the oil cooler before running the engine. If that's not done, it could possibly lead to oil starvation.