



Report of the Month

This C-85 engine has a problem.
Can you guess what's going on?

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

UNIT	MAKE/MODEL: Continental C-85	OIL TYPE & GRADE: Aeroshell W100 Plus (AD)
	FUEL TYPE: Gasoline (Leaded)	OIL USE INTERVAL: 40 Hours
	ADDITIONAL INFO: Common Wealth SkyRanger	

ELEMENTS IN PARTS PER MILLION	MI/HR on Oil	40	UNIT / LOCATION AVERAGES	40	50	50	20	UNIVERSAL AVERAGES
	MI/HR on Unit	339		298	220	125	85	
	Sample Date	6/1/2022		5/11/2022	3/23/2022	12/15/2021	10/26/2021	
	Make Up Oil Added	5 qts		5.50 qts	7 qts	4 qts	3 qts	
ALUMINUM	24	18	16	22	11	9	7	
CHROMIUM	4	4	3	4	3	5	4	
IRON	58	60	49	78	54	107	36	
COPPER	62	51	57	60	26	27	13	
LEAD	3380	3017	3313	3834	1541	1211	1419	
TIN	8	7	8	8	3	6	2	
MOLYBDENUM	0	0	0	1	0	0	1	
NICKEL	1	1	1	2	1	1	1	
MANGANESE	1	1	1	1	1	1	1	
SILVER	0	0	0	0	0	0	0	
TITANIUM	0	0	0	0	0	0	0	
POTASSIUM	0	1	0	2	0	0	0	
BORON	2	2	2	2	1	1	1	
SILICON	6	7	6	8	9	7	8	
SODIUM	5	4	3	3	3	3	2	
CALCIUM	3	4	3	5	3	3	23	
MAGNESIUM	1	2	1	4	2	2	5	
PHOSPHORUS	1124	1132	1067	1154	1183	1030	522	
ZINC	7	7	6	9	6	8	8	
BARIUM	0	0	0	0	0	0	0	

Values
Should Be*

PROPERTIES	SUS Viscosity @ 210°F	99.4	86-105	97.9	98.1	90.7	77.5
	cSt Viscosity @ 100°C	20.21	17.0-21.8	19.86	19.92	18.14	14.90
	Flashpoint in °F	490	>460	435	485	490	445
	Fuel %	<0.5	<1.0	1.3	<0.5	<0.5	0.8
	Antifreeze %	-		-	-	-	-
	Water %	0.0	0.0	0.0	0.0	0.0	0.0
	Insolubles %	0.3	<0.6	0.3	0.3	0.3	0.3
	TBN						
	TAN						
	ISO Code						

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

This one was tricky. When copper started really going up, Amanda called the owner to talk about the engine. She asked if by any chance the engine has an oil cooler. The owner said he had added one in between the December 2021 and March 2022 samples. Bingo! That was, we thought, the answer. When new, oil coolers will shed copper in the form of oxides. But copper kept going up after that, when it should have improved. We found out later that the engine spun a bearing. Bearing problems are hard to see in analysis, because the lead babbitt outer shell is masked by lead from 100LL blow-by.