



Shell LubeAnalyst

Equipment - Component
CAPT. KIRBY DUPUIS - Engine - Marine
Propulsion/Auxiliary PORT MAIN ENGINE

Site/Vessel Name - Code
Capt. Kirby Dupuis - 12456

Customer
FLORIDA MARINE, LLC

Manufacturer - Model
Caterpillar Inc - 3512C

LubeAnalyst Code
01440475/ELF01

Registered Lubricant
Shell - Rotella T 15W-40 (CJ-4)



Action

Diagnosis

Lubricant and filter change is suggested if not done at sampling time.
Base number is below acceptable minimum.

Sample Information					
Sample Number	16292801380	19030864746	19030866174	19030864748	19030866175
Sample Condition	✗	!	✓	✓	✓
Sample Date	31/Jul/2021	23/Mar/2021	01/Mar/2021	03/Dec/2020	26/Aug/2020
Sample Received	17/Aug/2021	05/Apr/2021	01/Mar/2021	29/Dec/2020	09/Sep/2020
Sample Completed	19/Aug/2021	06/Apr/2021	02/Mar/2021	31/Dec/2020	10/Sep/2020
Lubricant in use	Rotella T 15W-40 (CJ-4)	Rotella T 15W-40 (CJ-4)	Rotella T 15W-40 (CJ-4)	Rotella T 15W-40 (CJ-4)	Rotella T 15W-40 (CJ-4)
Equipment Life	70901 (Hours)	67876 (Hours)	66846 (Hours)	65235 (Hours)	62994 (Hours)
Lubricant Life	940 (Hours)	1000 (Hours)	1080 (Hours)	496 (Hours)	684 (Hours)
Top-up Volume					
Physical Characteristics					
Viscosity 100°C cSt	15.8	15.6	15.7	15.1	15.2
TBN (D 4739) mg KOH/g	✗ 3.52	! 4.92	5.13	5.92	4.88
Wear					
Iron (Fe) ppm	15	9	8	8	5
Chromium (Cr) ppm	0	0	0	0	0
Tin (Sn) ppm	0	0	0	0	0
Lead (Pb) ppm	1	1	1	0	0
Copper (Cu) ppm	10	4	1	1	1
Nickel (Ni) ppm	1	1	0	0	0
Aluminium (Al) ppm	1	1	1	1	2
Vanadium (V) ppm	0	0	0	0	0
Silver (Ag) ppm	0	0	0	0	0
Titanium (Ti) ppm	0	0	0	0	0
Manganese (Mn) ppm	0	0	0	0	0
Contamination					
Water Content (FT-IR/Crackle) %	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na) ppm	7	7	5	4	4
Lithium (Li) ppm	0	0	0	0	0
Silicon (Si) ppm	2	2	2	2	2
Antimony (Sb) ppm	1	0	0	0	0
Cadmium (Cd) ppm	0	0	0	0	0
Potassium (K) ppm	8	4	7	8	6
Fuel Dilution (FIDGC) % Volume	<2.0	<2.0	<2.0	<1.0	<1.0
Soot (FT-IR/Wilks) % Weight	<0.1	<0.1	<0.1	<0.1	<0.1
Additives					
Calcium (Ca) ppm	2483	2319	2290	2693	2249
Zinc (Zn) ppm	1299	1214	1178	1381	1156
Phosphorus (P) ppm	1139	1074	993	1151	970
Barium (Ba) ppm	0	0	0	1	0
Molybdenum (Mo) ppm	2	2	1	2	2
Magnesium (Mg) ppm	24	21	17	26	18
Boron (B) ppm	70	114	132	170	143



Shell LubeAnalyst

Equipment - Component
CAPT. KIRBY DUPUIS - Engine - Marine
Propulsion/Auxiliary STBD MAIN ENGINE

Site/Vessel Name - Code
Capt. Kirby Dupuis - 12456

Customer
FLORIDA MARINE, LLC

Manufacturer - Model
Caterpillar Inc - 3512

LubeAnalyst Code
01440475/ELF02

Registered Lubricant
Shell - Rotella T Triple Protection 15W-40



Attention

Diagnosis

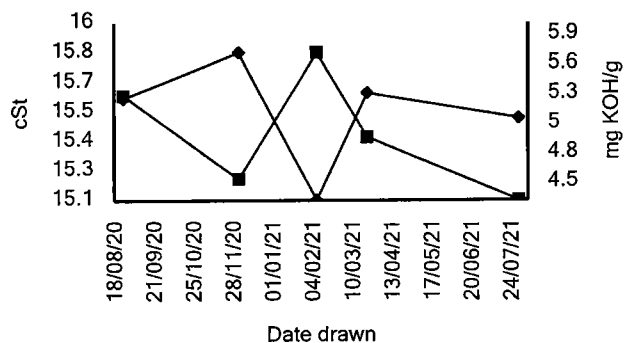
Total Base Number is MODERATELY LOW.

Sample Information					
Sample Number	16292801364	19030864747	19030866173	19030864745	19030866176
Sample Condition	!	✓	!	✓	✓
Sample Date	31/Jul/2021	23/Mar/2021	08/Feb/2021	03/Dec/2020	26/Aug/2020
Sample Received	13/Aug/2021	06/Apr/2021	01/Mar/2021	29/Dec/2020	23/Sep/2020
Sample Completed	16/Aug/2021	07/Apr/2021	10/Mar/2021	30/Dec/2020	25/Sep/2020
Lubricant in use	Rotella T Triple Protection 15W-40	Rotella T Triple Protection 15W-40	Rotella T Triple Protection 15W-40	Rotella T Triple Protection 15W-40	Rotella T Triple Protection 15W-40
Equipment Life	70811 (Hours)	67800 (Hours)	66770 (Hours)	65159 (Hours)	62926 (Hours)
Lubricant Life	940 (Hours)	1000 (Hours)	1080 (Hours)	492 (Hours)	684 (Hours)
Top-up Volume					
Physical Characteristics					
Viscosity 100°C cSt	15.1	15.4	15.8	15.2	15.6
TBN (D 4739) mg KOH/g	! 5.07	5.31	! 4.29	5.69	5.26
Wear					
Iron (Fe) ppm	7	7	9	9	8
Chromium (Cr) ppm	0	0	0	0	0
Tin (Sn) ppm	0	0	0	0	0
Lead (Pb) ppm	0	0	2	0	0
Copper (Cu) ppm	4	2	2	1	2
Nickel (Ni) ppm	1	1	0	0	0
Aluminium (Al) ppm	3	1	1	1	3
Vanadium (V) ppm	0	0	0	0	0
Silver (Ag) ppm	0	0	0	0	0
Titanium (Ti) ppm	0	0	0	0	0
Manganese (Mn) ppm	0	0	0	0	0
Contamination					
Water Content (FT-IR/Crackle) %	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na) ppm	9	6	4	4	4
Lithium (Li) ppm	0	0	0	0	0
Silicon (Si) ppm	2	2	2	2	3
Antimony (Sb) ppm	0	0	0	0	0
Cadmium (Cd) ppm	0	0	0	0	0
Potassium (K) ppm	11	3	8	7	2
Fuel Dilution (FIDGC) % Volume	<2.0	<2.0	<2.0	<1.0	<1.0
Soot (FT-IR/Wilks) % Weight	<0.1	<0.1	<0.1	<0.1	<0.1
Additives					
Calcium (Ca) ppm	2558	2461	2286	2277	2154
Zinc (Zn) ppm	1287	1280	1193	1175	1098
Phosphorus (P) ppm	1145	1098	1014	974	918
Barium (Ba) ppm	0	0	0	0	0
Molybdenum (Mo) ppm	2	2	1	2	2
Magnesium (Mg) ppm	25	23	17	23	18
Boron (B) ppm	145	136	113	137	115

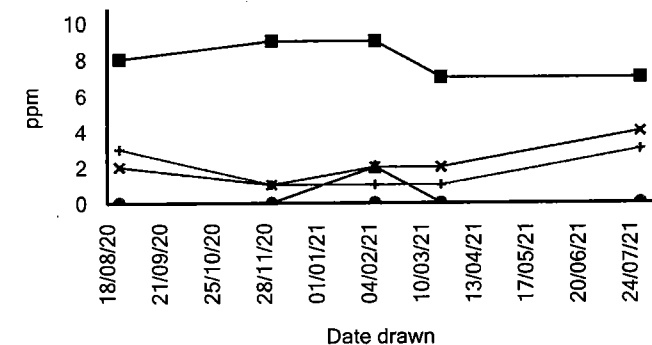


Graphs

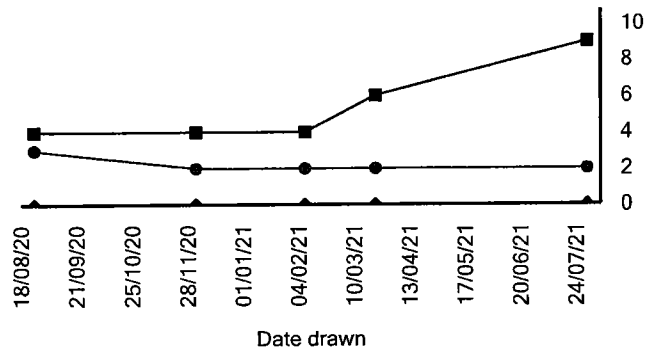
Physical Characteristics



Wear



Contamination



Additives

