

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR R946 046853-1491 - Diesel Engine

Sample No: LH0258282

Oil Type: LIEBHERR MOTOROIL 5W30



SAMPLE INFORMATION

Sample Number	LH0258282	LH0243986	LH0229877	LH0220890
Sample Date	31 Jul 2023	24 Feb 2023	06 Oct 2022	25 May 2022
Machine Hours	4055	3333	2811	2271
Oil Hours	722	522	2311	526
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	NORMAL	NORMAL

ACECO

10119 RESIDENCY ROAD
MANASSAS, VA
US 20110
Contact: RON BROCK



OIL CONDITION

Visc @ 100°C	cSt	12.2	11.6	11.6	11.7
Base Number (BN)	mg KOH/g	10.8	15.2	15.9	15.3
Oxidation (PA)	%	69	48	50	64

T: (703)392-0111
F: (703)331-5604



CONTAMINATION

Soot %	%	0.1	0.1	0.1	0.1
Nitration (PA)	%	120	108	113	117
Sulfation (PA)	%	55	45	48	54
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	8	9	8	8
Sodium	ppm	2	3	2	3
Potassium	ppm	3	3	6	3

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



WEAR METALS

Iron	ppm	11	10	11	14
Copper	ppm	4	2	7	27
Lead	ppm	0	<1	<1	2
Tin	ppm	<1	1	<1	1
Aluminum	ppm	4	4	4	4
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	<1	1	2	6
Nickel	ppm	0	0	0	0
Titanium	ppm	0	<1	<1	0
Silver	ppm	<1	<1	0	<1
Manganese	ppm	<1	<1	<1	<1
Vanadium	ppm	0	<1	0	0



ADDITIVES

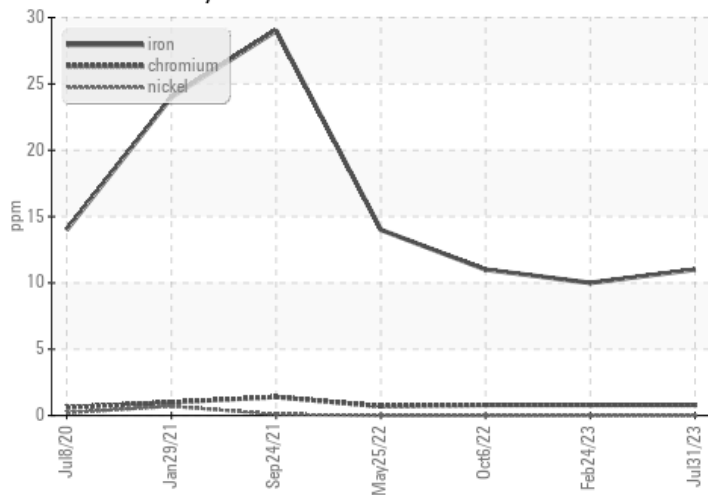
Calcium	ppm	3990	5015	4340	4285
Magnesium	ppm	231	34	35	110
Zinc	ppm	1231	1360	1185	1194
Phosphorus	ppm	1032	1135	1017	1041
Barium	ppm	0	0	2	<1
Boron	ppm	209	277	230	233

Depot: ACEMAN
Unique No: 10635628
Signed: Wes Davis
Report Date: 08 Sep 2023

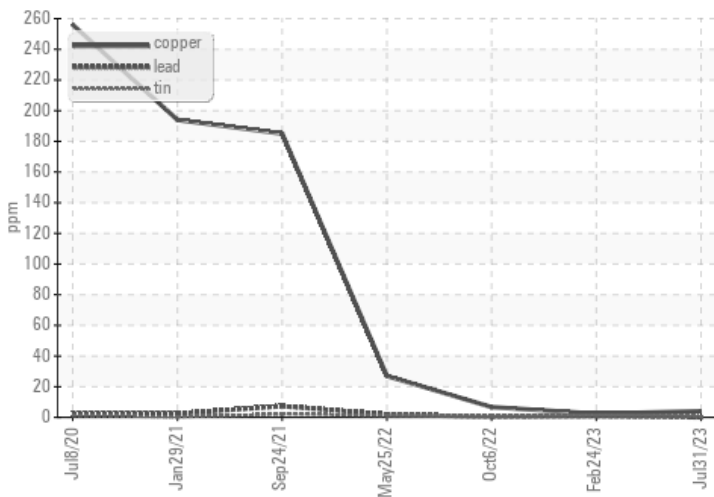


GRAPHS

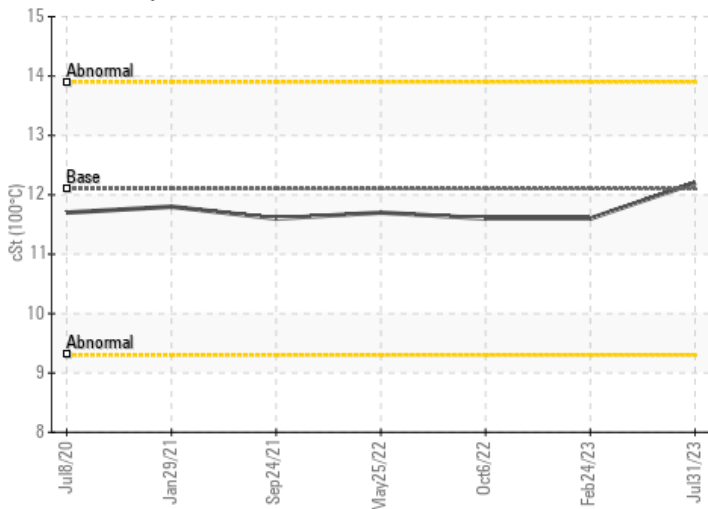
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

