

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR R944C 032007-793 - Diesel Engine

Sample No: LH0244634

Oil Type: CONOCO PHILLIPS GUARDOL ECT 15W40



SAMPLE INFORMATION

Sample Number	LH0244634	LH0244658	LH0207973	LH0244531
Sample Date	23 Jun 2023	09 May 2023	27 Mar 2023	10 Feb 2023
Machine Hours	20967	19836	19487	19201
Oil Hours	300	250	300	300
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	ABNORMAL	NORMAL	NORMAL	NORMAL

NILES IRON & METAL CO. INC.

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OIL CONDITION

Visc @ 100°C	cSt	14.9	13.9	13.7	13.7
Base Number (BN)	mg KOH/g	6.1	6.9	7.4	7.0
Oxidation (PA)	%	56	53	51	50



CONTAMINATION

Soot %	%	3	2.6	2	2.5
Nitration (PA)	%	77	73	67	73
Sulfation (PA)	%	65	63	60	61
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	6	6	6	6
Sodium	ppm	0	2	1	2
Potassium	ppm	2	4	<1	3

Diagnosis

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. All component wear rates are normal. There is an abnormal amount of solids and carbon present 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	20	18	15	8
Copper	ppm	<1	<1	0	<1
Lead	ppm	0	2	0	<1
Tin	ppm	0	<1	0	<1
Aluminum	ppm	2	<1	<1	<1
Chromium	ppm	<1	1	0	<1
Molybdenum	ppm	29	28	31	27
Nickel	ppm	0	<1	0	0
Titanium	ppm	10	6	7	11
Silver	ppm	0	1	0	0
Manganese	ppm	<1	1	<1	1
Vanadium	ppm	0	<1	0	0



ADDITIVES

Calcium	ppm	1470	1434	1489	1537
Magnesium	ppm	491	542	589	596
Zinc	ppm	1147	1178	1239	1250
Phosphorus	ppm	980	919	999	987
Barium	ppm	0	0	0	0
Boron	ppm	28	26	30	34

Depot: NILNIL

Unique No: 10559245

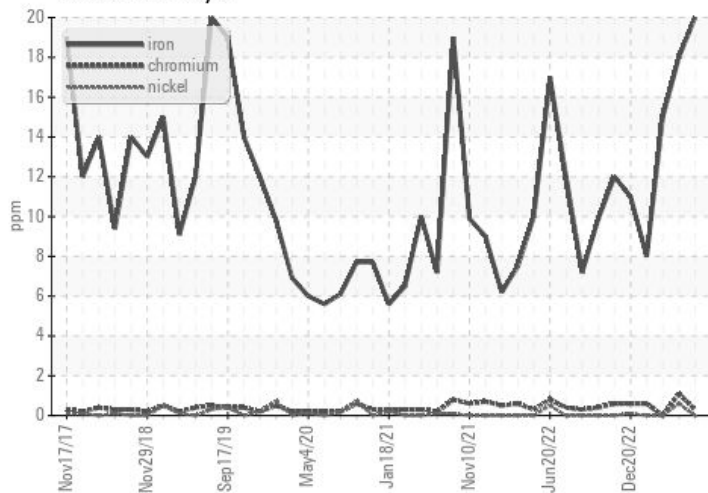
Signed: Jonathan Hester

Report Date: 14 Jul 2023

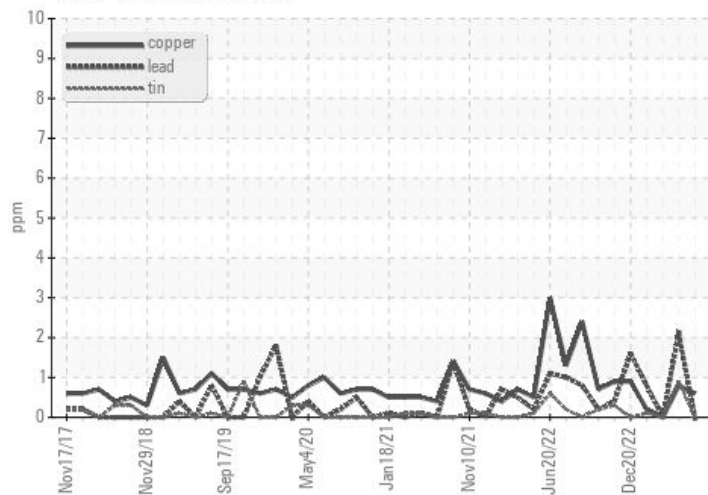


GRAPHS

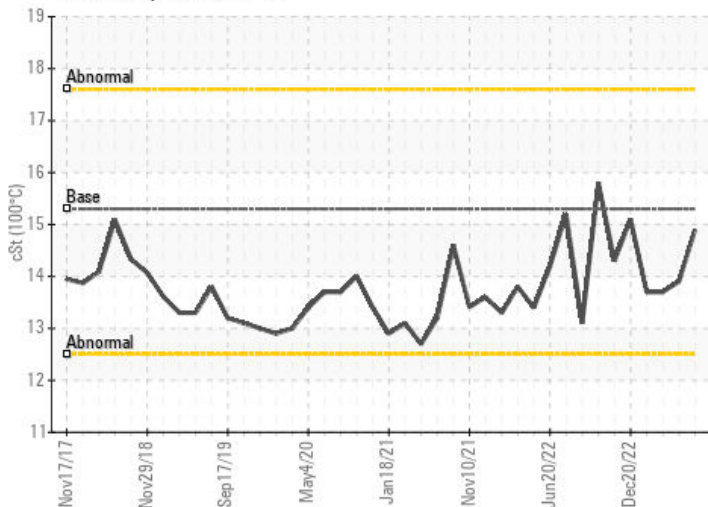
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

