

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR A944B 016166-744 - Diesel Engine

Sample No: LH0244863

Oil Type: CONOCO PHILLIPS GUARDOL ECT 15W40



SAMPLE INFORMATION

Sample Number	LH0244863	LH0244639	LH0244656	LH0207974
Sample Date	03 Oct 2023	16 Aug 2023	04 May 2023	24 Mar 2023
Machine Hours	48753	48417	47715	47407
Oil Hours	300	300	250	300
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	ATTENTION	ATTENTION	ATTENTION	ATTENTION

NILES IRON & METAL CO. INC.

P.O. BOX 166

NILES, OH

US 44446

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OIL CONDITION

Visc @ 100°C	cSt	11.7	11.9	12.2	11.9
Base Number (BN)	mg KOH/g	7.6	8.1	8.2	8.1
Oxidation (PA)	%	48	50	55	54

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 no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



CONTAMINATION

Soot %	%	1.2	1.4	1.1	1.1
Nitration (PA)	%	63	69	73	69
Sulfation (PA)	%	52	55	56	54
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	0.4
Silicon	ppm	8	6	8	8
Sodium	ppm	1	2	4	3
Potassium	ppm	4	2	6	3



WEAR METALS

Iron	ppm	33	22	21	27
Copper	ppm	2	2	3	4
Lead	ppm	<1	<1	2	<1
Tin	ppm	<1	<1	1	<1
Aluminum	ppm	3	2	4	2
Chromium	ppm	<1	<1	2	1
Molybdenum	ppm	42	24	22	38
Nickel	ppm	0	0	<1	0
Titanium	ppm	4	6	10	3
Silver	ppm	0	0	<1	0
Manganese	ppm	0	<1	1	<1
Vanadium	ppm	0	0	0	0



ADDITIVES

Calcium	ppm	1776	1758	1713	1771
Magnesium	ppm	623	591	585	577
Zinc	ppm	1359	1256	1299	1350
Phosphorus	ppm	1125	1072	1086	1097
Barium	ppm	0	<1	0	0
Boron	ppm	46	41	55	34

Depot: NILNIL

Unique No: 10701313

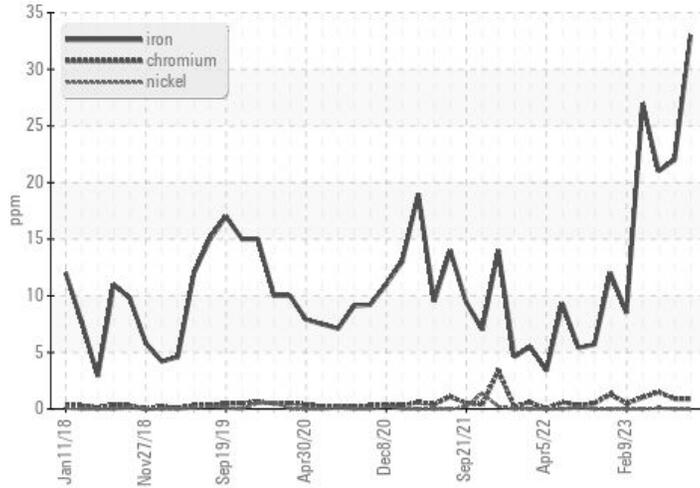
Signed: Don Baldrige

Report Date: 21 Oct 2023

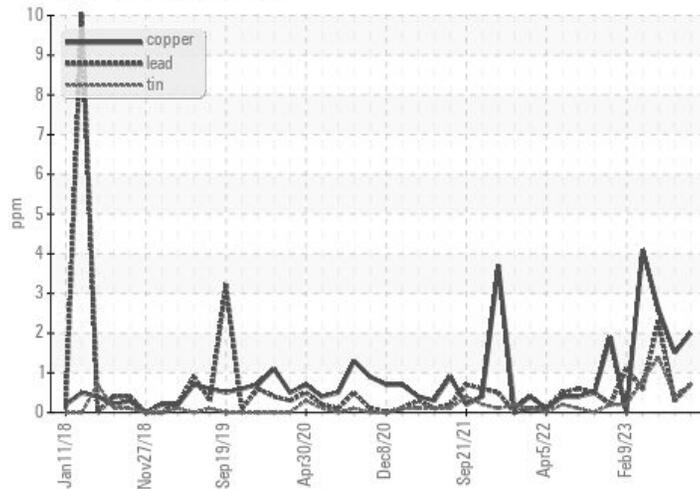


GRAPHS

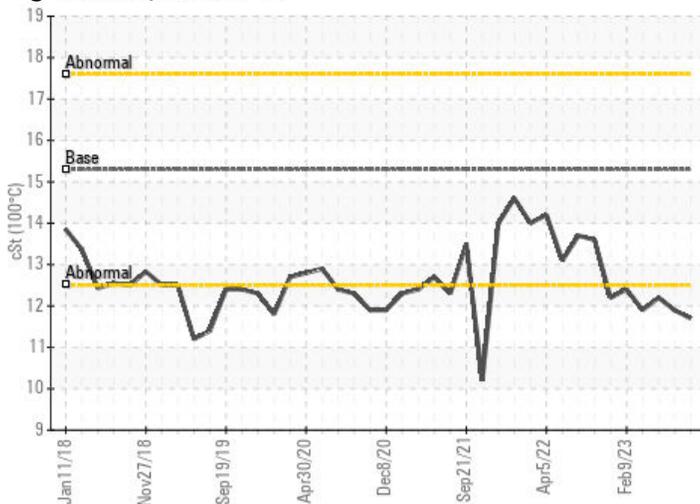
Ferrous Alloys



Non-ferrous Metals



● Viscosity @ 100°C



Base Number

