

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR A944B 016166-744 - Diesel Engine

Sample No: LH0244639

Oil Type: CONOCO PHILLIPS GUARDOL ECT 15W40



SAMPLE INFORMATION

Sample Number	LH0244639	LH0244656	LH0207974	LH0244530
Sample Date	16 Aug 2023	04 May 2023	24 Mar 2023	09 Feb 2023
Machine Hours	48417	47715	47407	47080
Oil Hours	300	250	300	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	11.9	12.2	11.9	12.4
Base Number (BN)	mg KOH/g	8.1	8.2	8.1	8.5
Oxidation (PA)	%	50	55	54	59

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 %	%	1.4	1.1	1.1	0.4
Nitration (PA)	%	69	73	69	68
Sulfation (PA)	%	55	56	54	53
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	0.4	<1.0
Silicon	ppm	6	8	8	6
Sodium	ppm	2	4	3	2
Potassium	ppm	2	6	3	2



WEAR METALS

Iron	ppm	22	21	27	8
Copper	ppm	2	3	4	0
Lead	ppm	<1	2	<1	1
Tin	ppm	<1	1	<1	<1
Aluminum	ppm	2	4	2	2
Chromium	ppm	<1	2	1	<1
Molybdenum	ppm	24	22	38	41
Nickel	ppm	0	<1	0	0
Titanium	ppm	6	10	3	5
Silver	ppm	0	<1	0	0
Manganese	ppm	<1	1	<1	1
Vanadium	ppm	0	0	0	0



ADDITIVES

Calcium	ppm	1758	1713	1771	1807
Magnesium	ppm	591	585	577	472
Zinc	ppm	1256	1299	1350	1274
Phosphorus	ppm	1072	1086	1097	995
Barium	ppm	<1	0	0	0
Boron	ppm	41	55	34	23

Depot: NILNIL

Unique No: 10633510

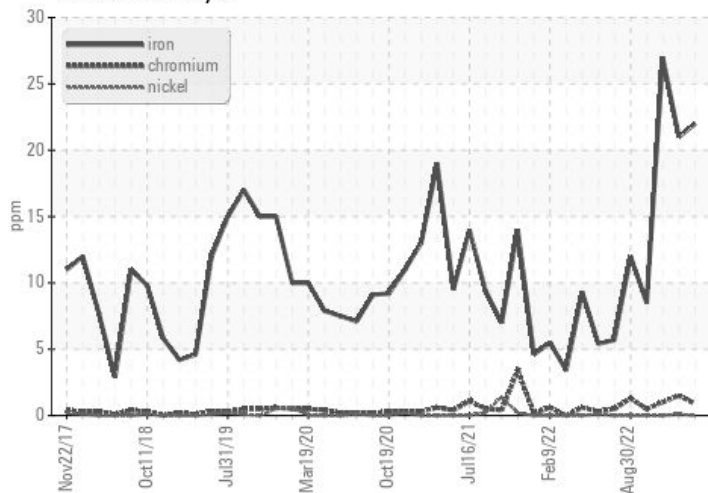
Signed: Jonathan Hester

Report Date: 08 Sep 2023

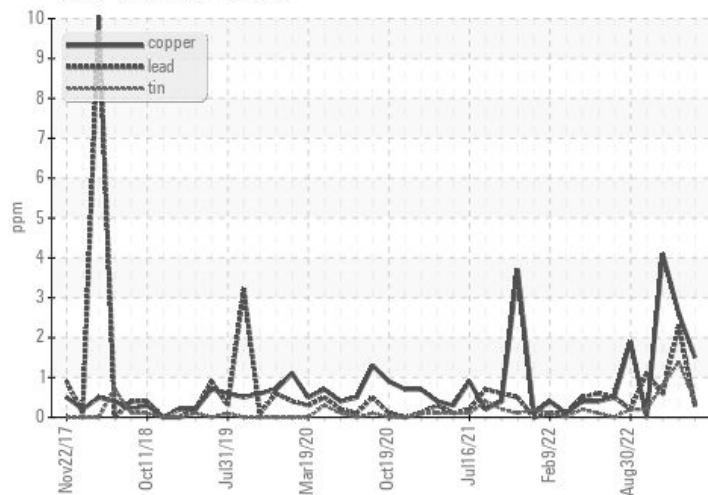


GRAPHS

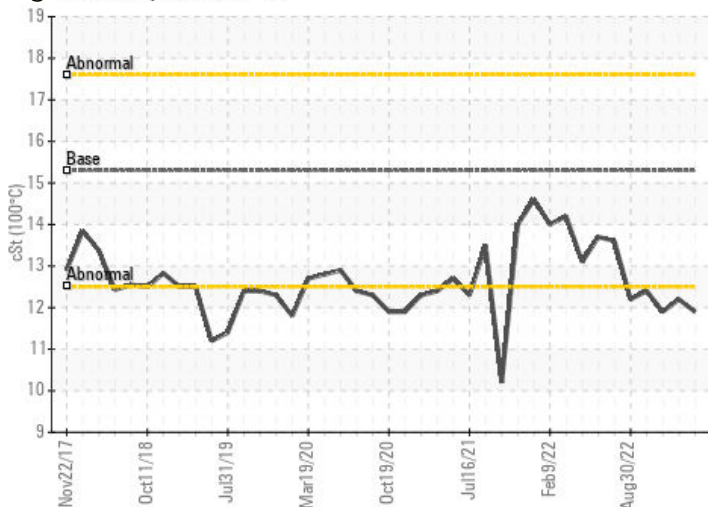
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

