

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### LIEBHERR A944BHD 023921-744 - Diesel Engine

Sample No: LH0273250

Oil Type: CONOCO PHILLIPS GUARDOL ECT 15W40



#### SAMPLE INFORMATION

Sample Number	LH0273250	LH0244847	LH0244659	LH0244527
Sample Date	25 Jan 2024	28 Nov 2023	12 May 2023	07 Feb 2023
Machine Hours	46350	45917	45038	44409
Oil Hours	250	300	250	250
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	ATTENTION	ATTENTION	NORMAL	ATTENTION

**NILES IRON & METAL CO. INC.**

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#### OIL CONDITION

Visc @ 100°C	cSt	11.7	11.6	12.7	11.8
Base Number (BN)	mg KOH/g	8.2	8.6	8.5	8.9
Oxidation (PA)	%	64	60	59	52



#### CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	0.3	0.3	0.5	0.8
Nitration (PA)	%	73	68	75	60
Sulfation (PA)	%	54	53	55	52
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	1.1	<1.0	0.6
Silicon	ppm	8	9	8	8
Sodium	ppm	8	10	3	3
Potassium	ppm	3	2	3	6



#### WEAR METALS

Iron	ppm	26	26	11	23
Copper	ppm	5	6	0	4
Lead	ppm	1	<1	1	2
Tin	ppm	1	1	<1	1
Aluminum	ppm	2	2	3	2
Chromium	ppm	<1	<1	1	2
Molybdenum	ppm	38	34	23	38
Nickel	ppm	<1	<1	<1	0
Titanium	ppm	7	9	12	4
Silver	ppm	0	0	<1	0
Manganese	ppm	1	<1	<1	1
Vanadium	ppm	<1	<1	0	0



#### ADDITIVES

Calcium	ppm	1371	1657	1745	1801
Magnesium	ppm	651	543	635	467
Zinc	ppm	1205	1280	1356	1187
Phosphorus	ppm	1042	1069	1116	956
Barium	ppm	2	3	0	0
Boron	ppm	37	54	56	28

#### 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.

Depot: NILNIL

Unique No: 10869246

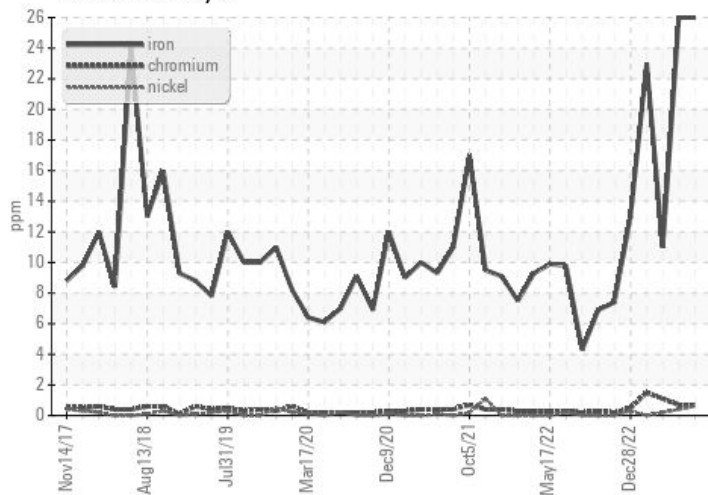
Signed: Angela Borella

Report Date: 08 Feb 2024

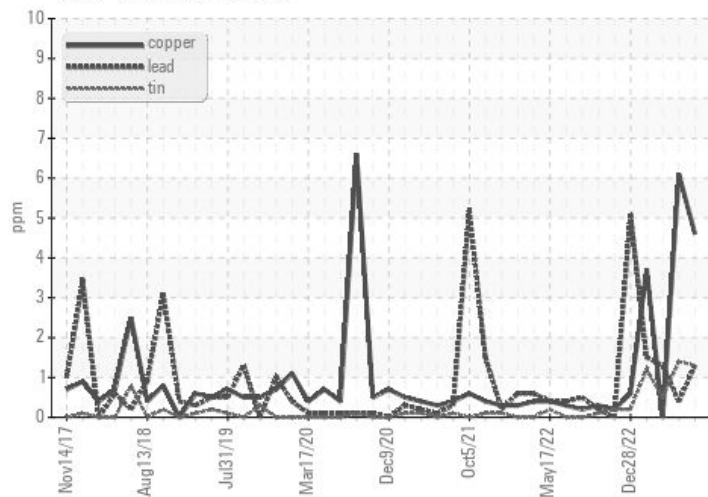


### GRAPHS

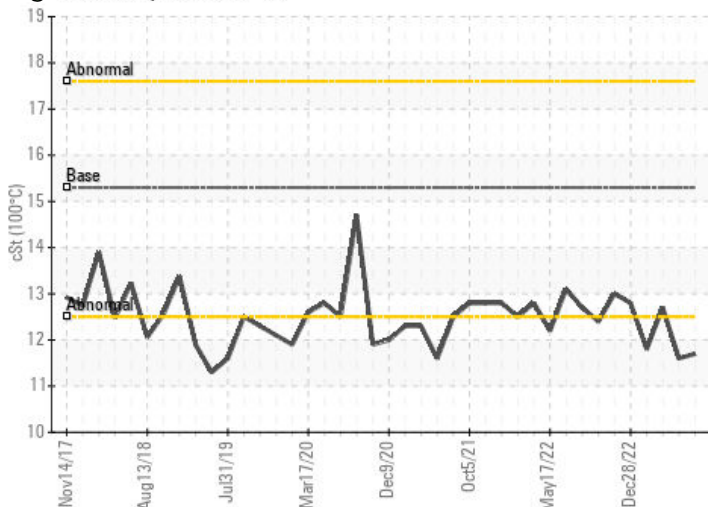
#### Ferrous Alloys



#### Non-ferrous Metals



#### Viscosity @ 100°C



#### Base Number

