

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR A944B 016166-744 - Diesel Engine

Sample No: LH0273249

Oil Type: CONOCO PHILLIPS GUARDOL ECT 15W40



SAMPLE INFORMATION

Sample Number	LH0273249	LH0244857	LH0244863	LH0244639
Sample Date	11 Jan 2024	27 Nov 2023	03 Oct 2023	16 Aug 2023
Machine Hours	49427	49111	48753	48417
Oil Hours	250	300	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

Contact: CRAIG STINSON

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OIL CONDITION

Visc @ 100°C	cSt	11.9	11.8	11.7	11.9
Base Number (BN)	mg KOH/g	8.4	8.6	7.6	8.1
Oxidation (PA)	%	51	53	48	50



CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	0.8	1	1.2	1.4
Nitration (PA)	%	62	67	63	69
Sulfation (PA)	%	53	54	52	55
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	6	6	8	6
Sodium	ppm	2	1	1	2
Potassium	ppm	4	1	4	2



WEAR METALS

Iron	ppm	11	17	33	22
Copper	ppm	2	1	2	2
Lead	ppm	1	<1	<1	<1
Tin	ppm	1	<1	<1	<1
Aluminum	ppm	3	2	3	2
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	38	33	42	24
Nickel	ppm	<1	<1	0	0
Titanium	ppm	7	8	4	6
Silver	ppm	0	0	0	0
Manganese	ppm	<1	<1	0	<1
Vanadium	ppm	<1	<1	0	0



ADDITIVES

Calcium	ppm	1395	1618	1776	1758
Magnesium	ppm	658	541	623	591
Zinc	ppm	1226	1264	1359	1256
Phosphorus	ppm	1051	1069	1125	1072
Barium	ppm	0	0	0	<1
Boron	ppm	35	42	46	41

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: 10869244

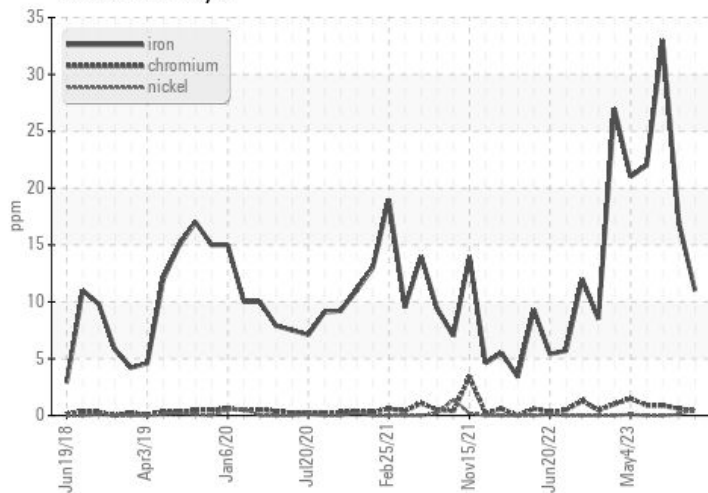
Signed: Angela Borella

Report Date: 08 Feb 2024

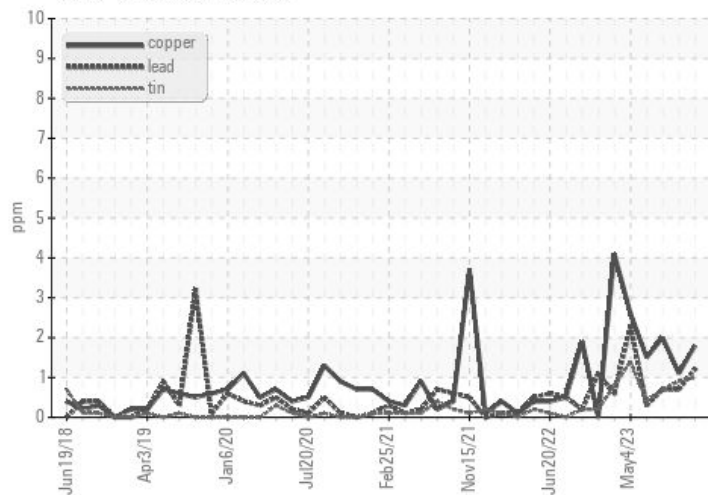


GRAPHS

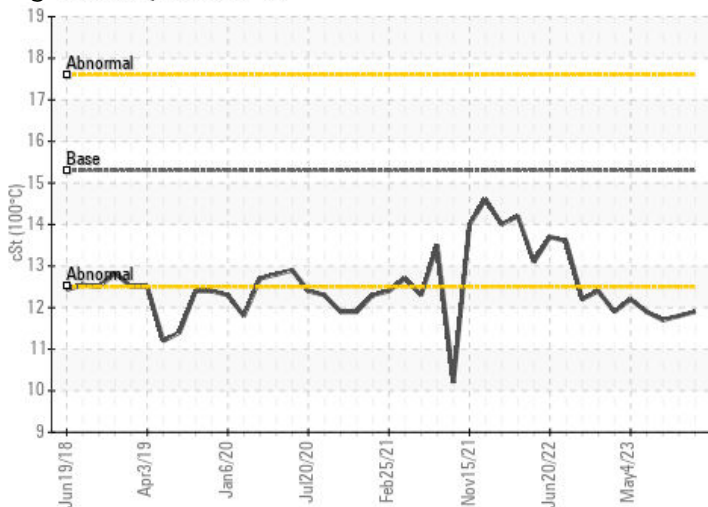
Ferrous Alloys



Non-ferrous Metals



● Viscosity @ 100°C



Base Number

