

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### LIEBHERR A944C032403-194 - Diesel Engine

Sample No: LH0244854

Oil Type: CONOCO PHILLIPS GUARDOL ECT 15W40



#### SAMPLE INFORMATION

Sample Number	LH0244854	LH0244638	LH0244641	LH0244660
Sample Date	30 Nov 2023	02 Oct 2023	15 Aug 2023	16 Jun 2023
Machine Hours	33998	33776	33575	33276
Oil Hours	300	300	300	300
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	ATTENTION	ATTENTION

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

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#### OIL CONDITION

Visc @ 100°C	cSt	13.0	12.6	12.1	11.7
Base Number (BN)	mg KOH/g	8.1	7.5	7.7	6.5
Oxidation (PA)	%	49	45	42	45



#### CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	1.5	1.2	0.6	0.9
Nitration (PA)	%	59	54	45	51
Sulfation (PA)	%	54	51	47	49
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	0.5
Silicon	ppm	9	6	5	4
Sodium	ppm	3	2	<1	0
Potassium	ppm	2	2	1	2



#### WEAR METALS

Iron	ppm	14	10	4	7
Copper	ppm	2	2	<1	1
Lead	ppm	0	<1	0	0
Tin	ppm	0	<1	0	0
Aluminum	ppm	2	1	<1	2
Chromium	ppm	<1	<1	<1	0
Molybdenum	ppm	40	33	28	17
Nickel	ppm	0	<1	0	0
Titanium	ppm	9	4	4	13
Silver	ppm	0	0	0	0
Manganese	ppm	0	<1	<1	0
Vanadium	ppm	0	<1	0	0



#### ADDITIVES

Calcium	ppm	1773	1467	1501	1220
Magnesium	ppm	597	468	524	357
Zinc	ppm	1380	1058	1172	982
Phosphorus	ppm	1111	907	977	841
Barium	ppm	0	3	0	0
Boron	ppm	50	31	41	48

#### Diagnosis

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 BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Depot: NILNIL

Unique No: 10779696

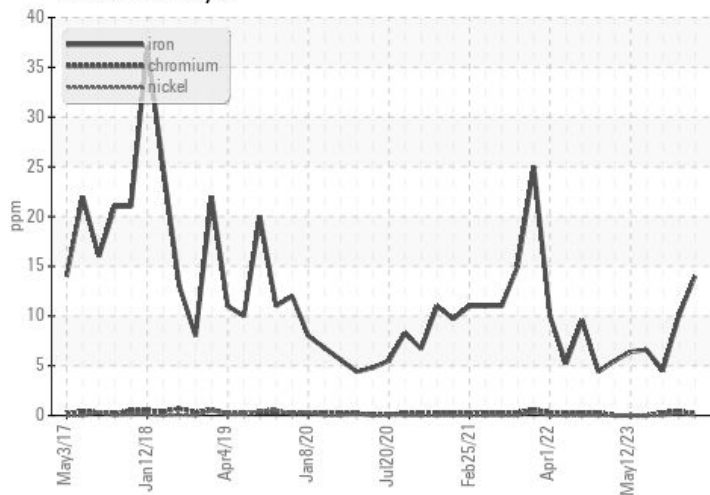
Signed: Wes Davis

Report Date: 12 Dec 2023

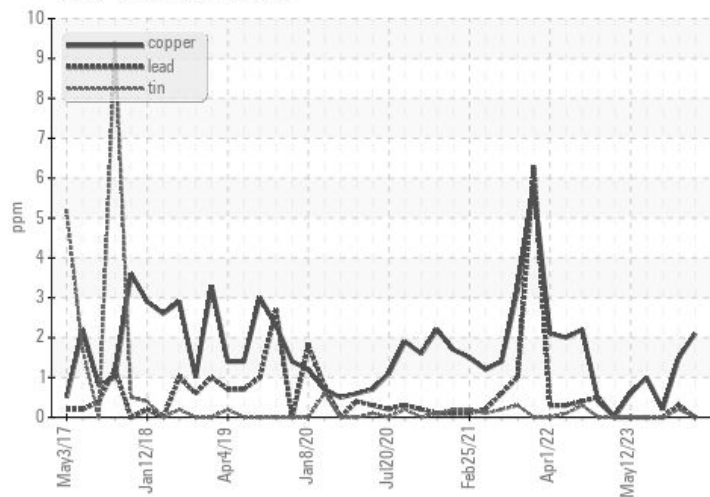


### GRAPHS

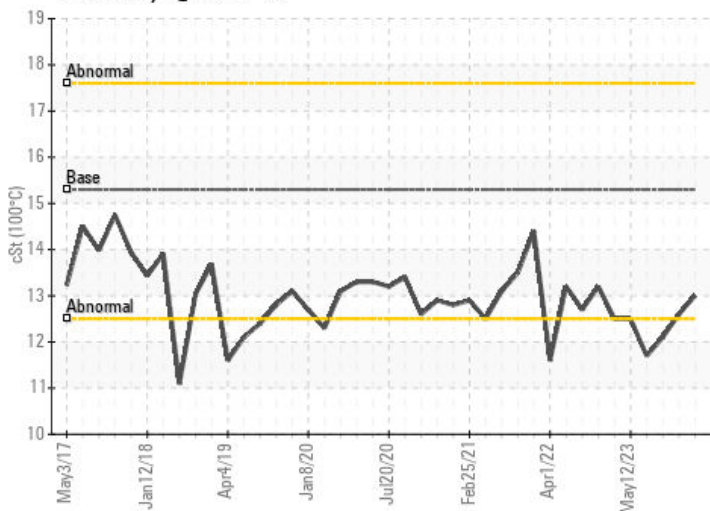
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

