

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR A934 045480-1007 - Diesel Engine

Sample No: LH0204248

Oil Type: DIESEL ENGINE OIL SAE 5W40



SAMPLE INFORMATION

Sample Number	LH0204248	LH0253910	LH0236492	LH0220533
Sample Date	28 Sep 2023	12 Jul 2023	22 Feb 2023	17 Oct 2022
Machine Hours	30631	30160	0	28490
Oil Hours	500	250	250	500
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	ATTENTION	ABNORMAL	NORMAL	NORMAL

NORTHERN METAL RECYCLING

2800 PACIFIC ST N
MINNEAPOLIS, MN
US 55411

Contact: CHRIS GILMER
chris.gilmer@emrgroup.com
T: (612)305-7338
F:



OIL CONDITION

Visc @ 100°C	cSt	11.1	15.8	14.7	16.0
Base Number (BN)	mg KOH/g	8.3	5.7	7.0	5.7
Oxidation (PA)	%	50	72	56	67



CONTAMINATION

Soot %	%	0.1	3.1	1.8	3.9
Nitration (PA)	%	53	92	78	100
Sulfation (PA)	%	49	75	61	79
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	0.2	<1.0	<1.0	<1.0
Silicon	ppm	13	8	8	7
Sodium	ppm	4	3	2	2
Potassium	ppm	5	2	4	1



WEAR METALS

Iron	ppm	16	15	35	12
Copper	ppm	2	3	<1	<1
Lead	ppm	0	2	0	2
Tin	ppm	0	<1	0	<1
Aluminum	ppm	4	1	2	1
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	31	8	9	7
Nickel	ppm	0	0	0	0
Titanium	ppm	0	100	98	93
Silver	ppm	0	0	<1	0
Manganese	ppm	0	<1	<1	<1
Vanadium	ppm	0	2	<1	1



ADDITIVES

Calcium	ppm	1282	1510	1378	1443
Magnesium	ppm	607	815	690	751
Zinc	ppm	823	1290	1221	1197
Phosphorus	ppm	625	1035	1004	997
Barium	ppm	0	0	0	0
Boron	ppm	120	50	75	55

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. Fuel content negligible. 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: NORMINLH
Unique No: 10735910
Signed: Sean Felton
Report Date: 13 Nov 2023

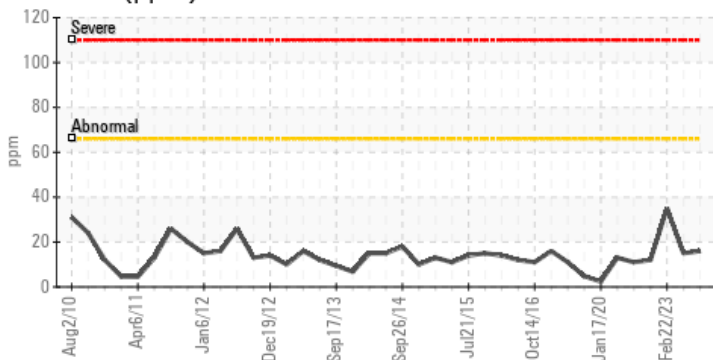
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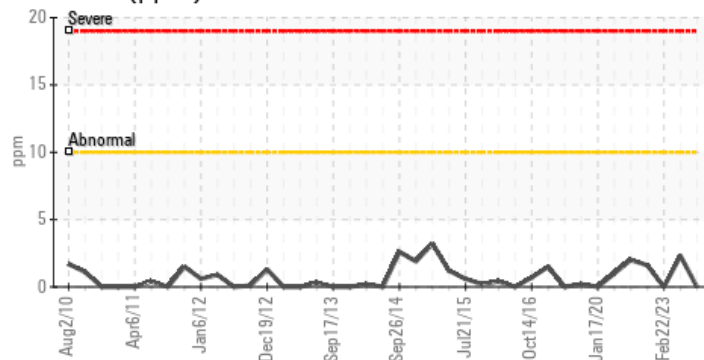


GRAPHS

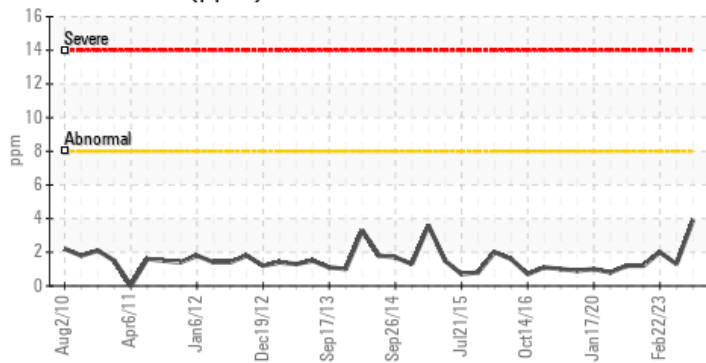
Iron (ppm)



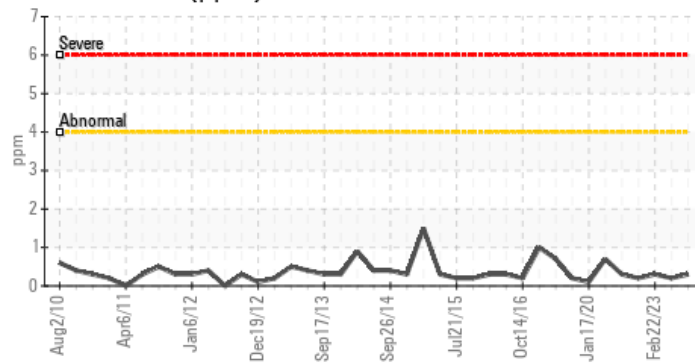
Lead (ppm)



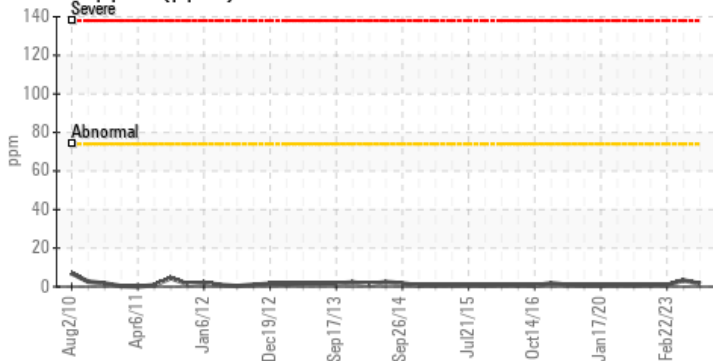
Aluminum (ppm)



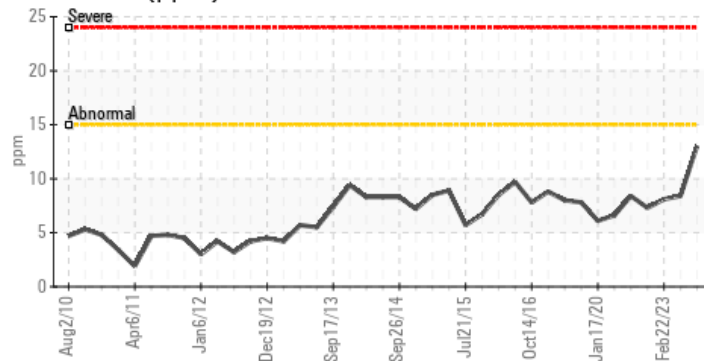
Chromium (ppm)



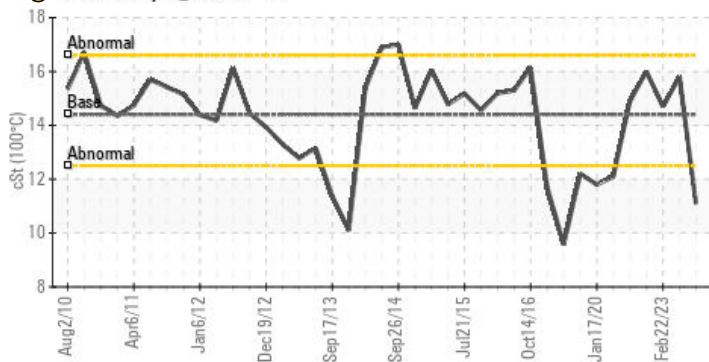
Copper (ppm)



Silicon (ppm)



● Viscosity @ 100°C



Base Number

