

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR L538 1559-59801 - Diesel Engine

Sample No: LH0209846

Oil Type: DIESEL ENGINE OIL SAE 5W30



SAMPLE INFORMATION

Sample Number	LH0209846	LH0209826	LH05841154	LH05774376
Sample Date	28 Feb 2024	11 Aug 2023	07 May 2023	21 Feb 2023
Machine Hours	3009	2501	2250	0
Oil Hours	0	0	0	0
Oil Changed	Changed	Changed	Not Changd	N/A
Sample Status	ABNORMAL	ABNORMAL	ABNORMAL	ABNORMAL

DIEHL AND NUEMAIER

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OIL CONDITION

Visc @ 100°C	cSt	9.2	10.8	11.0	11.1
Base Number (BN)	mg KOH/g	7.0	7.9	8.0	6.6
Oxidation (PA)	%	76	62	57	58



CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	0.3	0.3	0.1	0.3
Nitration (PA)	%	82	65	49	78
Sulfation (PA)	%	56	52	47	53
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	5.0	3.4	2.0	4.7
Silicon	ppm	3	4	3	6
Sodium	ppm	<1	0	2	3
Potassium	ppm	<1	2	3	4



WEAR METALS

Iron	ppm	26	27	19	57
Copper	ppm	0	2	1	5
Lead	ppm	0	<1	0	<1
Tin	ppm	0	<1	<1	<1
Aluminum	ppm	7	5	3	6
Chromium	ppm	<1	<1	<1	1
Molybdenum	ppm	3	49	51	8
Nickel	ppm	0	2	1	3
Titanium	ppm	0	4	4	67
Silver	ppm	0	0	0	0
Manganese	ppm	<1	<1	<1	<1
Vanadium	ppm	0	0	0	<1



ADDITIVES

Calcium	ppm	1102	1614	1724	1266
Magnesium	ppm	787	439	508	628
Zinc	ppm	739	1150	1264	1030
Phosphorus	ppm	629	984	1043	856
Barium	ppm	0	0	0	0
Boron	ppm	53	121	129	119

Diagnosis

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

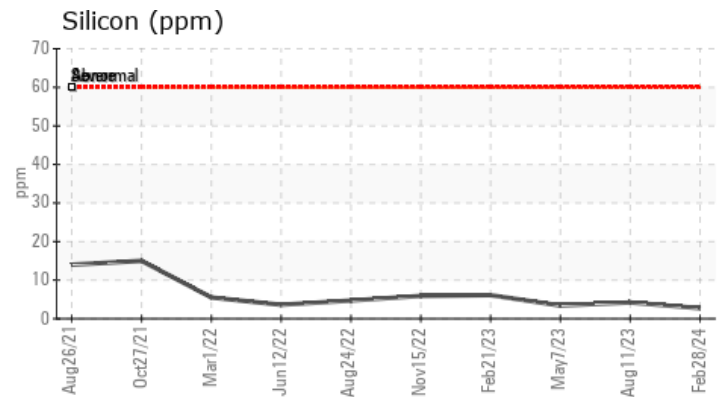
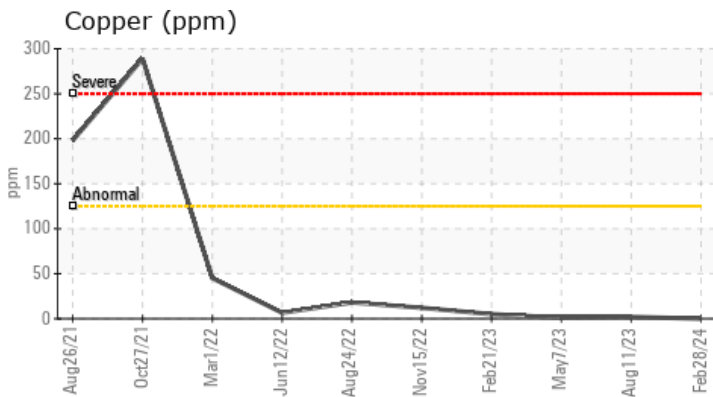
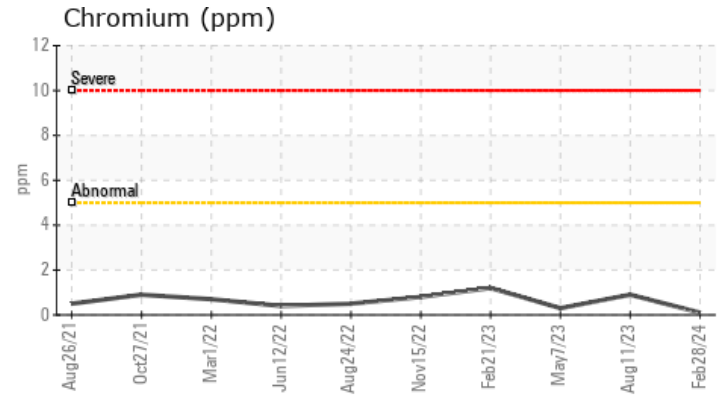
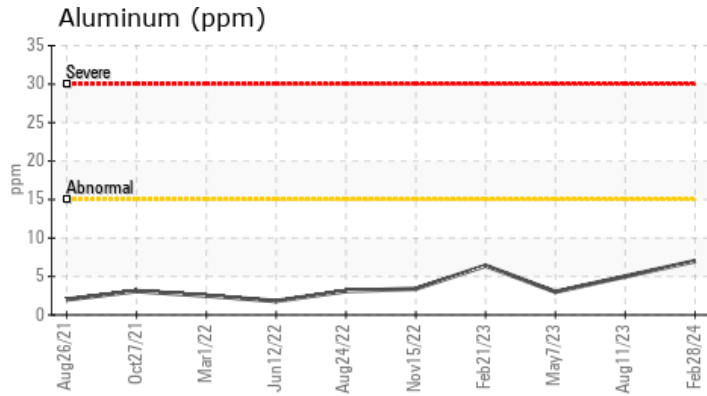
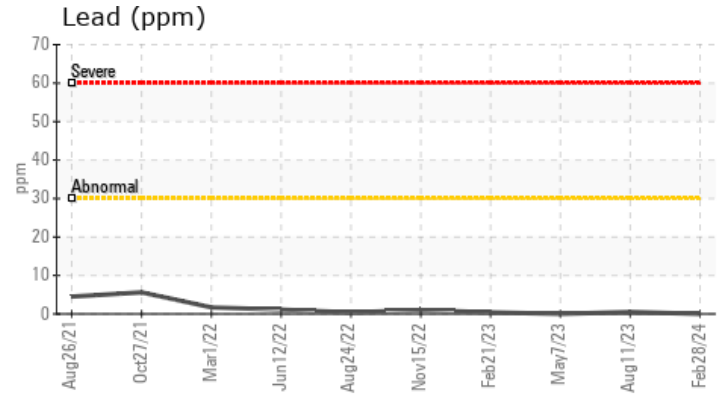
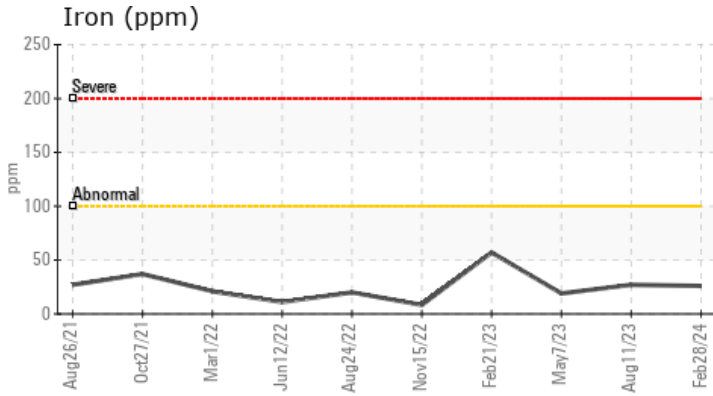
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Unique No: 10912745
Signed: Wes Davis
Report Date: 08 Mar 2024

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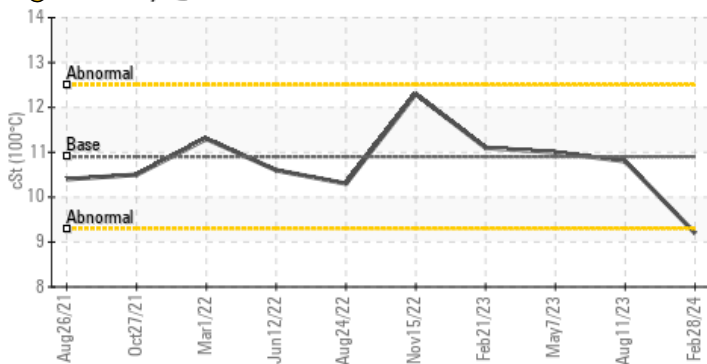
CONSTRUCTION EQUIPMENT



GRAPHS



● Viscosity @ 100°C



Base Number

