

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH110 155976-1227 - Diesel Engine

Sample No: LH0267555

Oil Type: DIESEL ENGINE OIL SAE 15W40



KINDER MORGAN

4301 IVERSON

TRINITY, AL

US 35601

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Sample Information

Sample Number	LH0267555	LH0267559	LH0267531	LH0258471
Sample Date	12 May 2024	26 Apr 2024	18 Apr 2024	27 Mar 2024
Machine Hours	1951	1769	1623	1266
Oil Hours	328	146	628	271
Oil Changed	Changed	Not Changd	Changed	Not Changd
Sample Status	NORMAL	NORMAL	NORMAL	NORMAL



Oil Condition

Visc @ 100°C	cSt	12.1	13.0	12.5	12.8
Base Number (BN)	mg KOH/g	7.0	7.2	6.6	7.5
Oxidation (PA)	%	63	60	71	63



Contamination

Water	%	NEG	NEG	NEG	NEG
Soot %	%	0.1	0.1	0.2	0.1
Nitration (PA)	%	57	49	70	56
Sulfation (PA)	%	58	56	59	56
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	1.1	<1.0	<1.0	<1.0
Silicon	ppm	10	10	10	10
Sodium	ppm	3	3	<1	3
Potassium	ppm	3	3	3	1



Wear Metals

Iron	ppm	5	4	6	4
Copper	ppm	12	12	72	6
Lead	ppm	<1	<1	1	<1
Tin	ppm	<1	<1	<1	<1
Aluminum	ppm	3	3	3	4
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	76	80	86	87
Nickel	ppm	<1	<1	<1	<1
Titanium	ppm	<1	<1	<1	<1
Silver	ppm	1	1	0	0
Manganese	ppm	<1	<1	<1	<1
Vanadium	ppm	<1	<1	<1	<1



Additives

Calcium	ppm	1343	1243	1348	1348
Magnesium	ppm	379	384	403	431
Zinc	ppm	1124	1067	1179	1204
Phosphorus	ppm	966	895	1080	1096
Barium	ppm	1	1	1	0
Boron	ppm	338	394	391	427

Diagnosis

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. Light fuel dilution occurring. No other contaminants were detected 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: KINTRI

Unique No: 11048756

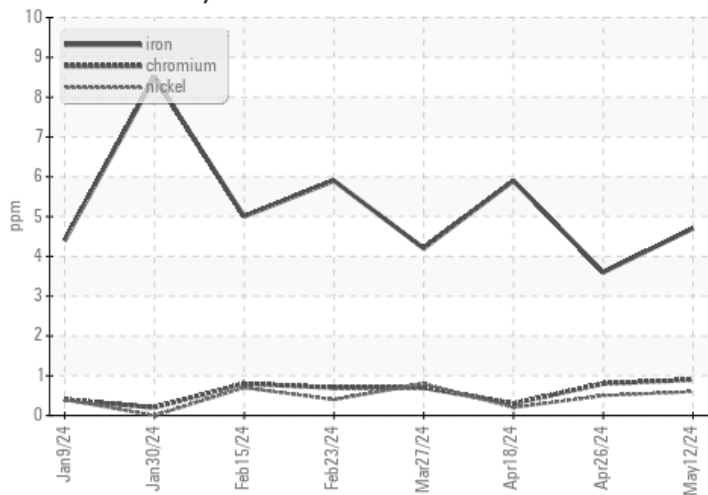
Signed: Wes Davis

Report Date: 30 May 2024

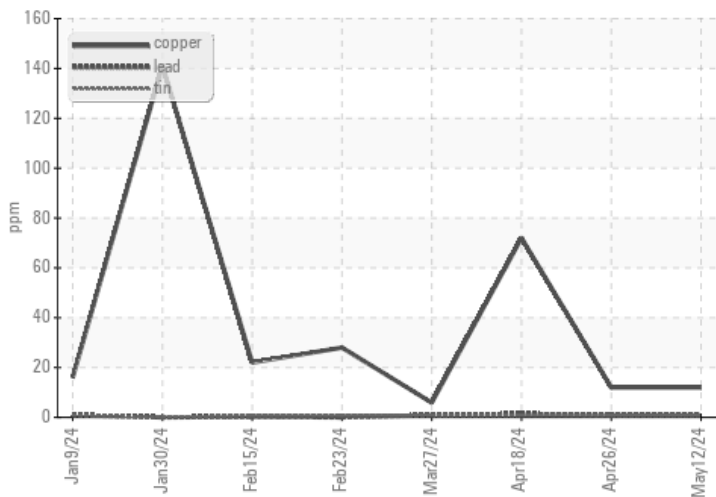


Graphs

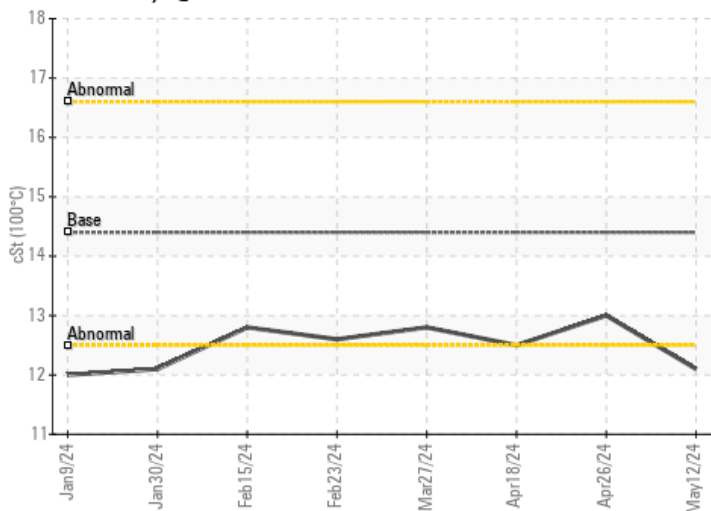
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

