LIEBHERR
CONSTRUCTION EQUIPMENT

LIEBHERR LH80M 1218-157090 - Diesel Engine

Sample No: LH0282894

Oil Type: DIESEL ENGINE OIL SAE 15W40

KINDER MORGAN
4301 IVERSON
TRINITY, AL
US 35601
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SAMPLE INFORMATION

Sample Number		**LH0282894**	LH0280580	---	---
Sample Date		**19 Mar 2024**	28 Feb 2024	---	---
Machine Hours		**545**	231	---	---
Oil Hours		**0**	0	---	---
Oil Changed		**Changed**	Not Changd	---	---
Sample Status		**ABNORMAL**	NORMAL	---	---

OIL CONDITION

Visc @ 100°C	cSt	**12.2**	12.1	---	---
Base Number (BN)	mg KOH/g	**4.6**	6.1	---	---
Oxidation (PA)	%	**186**	197	---	---

CONTAMINATION

Water	%	**NEG**	NEG	---	---
Soot %	%	**0.1**	0.1	---	---
Nitration (PA)	%	**92**	86	---	---
Sulfation (PA)	%	**102**	107	---	---
Glycol	%	**NEG**	NEG	---	---
Fuel	%	**<1.0**	1.0	---	---
Silicon	ppm	**11**	8	---	---
Sodium	ppm	**0**	<1	---	---
Potassium	ppm	**3**	<1	---	---

WEAR METALS

Iron	ppm	**10**	6	---	---
Copper	ppm	**218**	32	---	---
Lead	ppm	**2**	2	---	---
Tin	ppm	**2**	<1	---	---
Aluminum	ppm	**2**	2	---	---
Chromium	ppm	**1**	<1	---	---
Molybdenum	ppm	**52**	50	---	---
Nickel	ppm	**<1**	0	---	---
Titanium	ppm	**<1**	0	---	---
Silver	ppm	**0**	0	---	---
Manganese	ppm	**1**	<1	---	---
Vanadium	ppm	**<1**	0	---	---

ADDITIVES

Calcium	ppm	**1329**	1433	---	---
Magnesium	ppm	**804**	948	---	---
Zinc	ppm	**939**	941	---	---
Phosphorus	ppm	**831**	827	---	---
Barium	ppm	**22**	22	---	---
Boron	ppm	**143**	116	---	---

Diagnosis

No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other metal levels are typical for a new component breaking in. 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: KINTRI
Unique No: 10949840
Signed: Don Baldridge
Report Date: 30 Mar 2024

Report Id: KINTRI [WUSCAR] 06130375 (Generated: 03/30/2024 11:15:08) Rev: 1

Submitted By: ?

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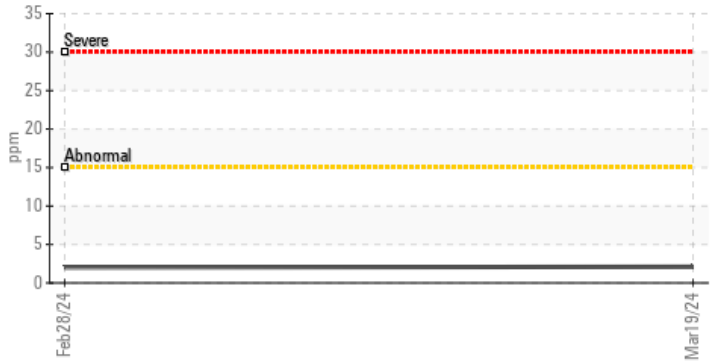
GRAPHS

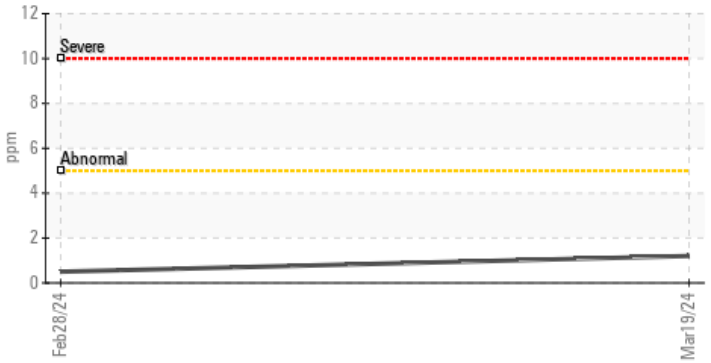
Iron (ppm)

Lead (ppm)

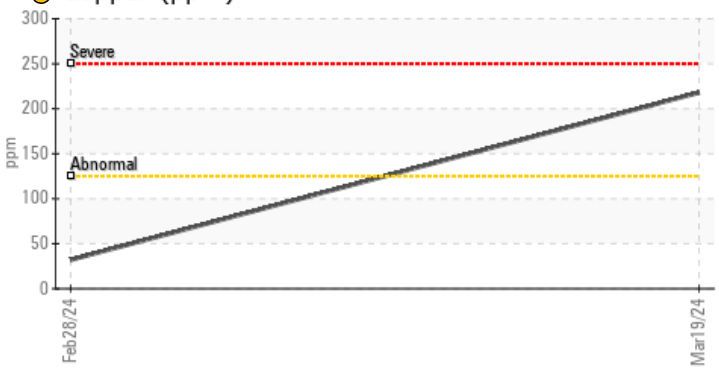
Aluminum (ppm)



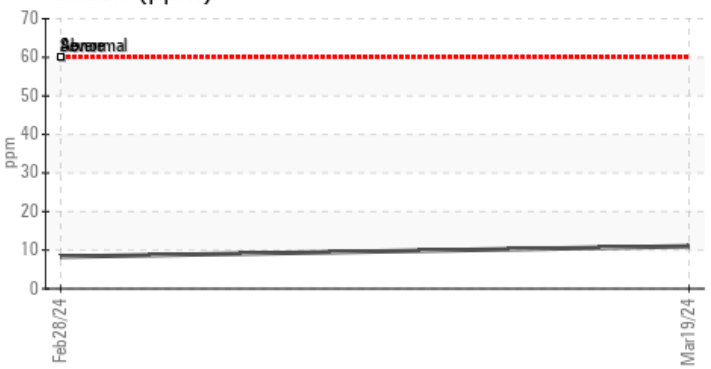
Chromium (ppm)



Copper (ppm)



Silicon (ppm)



Viscosity @ 100°C

Base Number