LIEBHERR
CONSTRUCTION EQUIPMENT

LIEBHERR LH40M 147356-1215 - Diesel Engine

Sample No: LH0259168

Oil Type: DIESEL ENGINE OIL SAE 15W40

RECO EQUIPMENT INC
8075 PRODUCTION DRIVE
FLORENCE, KY
US 41042
Contact: TRACEY EDGERTON
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T:
F: (859)727-7974

SAMPLE INFORMATION

Sample Number		**LH0259168**	---	---	---
Sample Date		**09 Oct 2023**	---	---	---
Machine Hours		**499**	---	---	---
Oil Hours		**499**	---	---	---
Oil Changed		**Changed**	---	---	---
Sample Status		**ABNORMAL**	---	---	---

OIL CONDITION

Visc @ 100°C	cSt	**12.1**	---	---	---
Base Number (BN)	mg KOH/g	**4.3**	---	---	---
Oxidation (PA)	%	**211**	---	---	---

CONTAMINATION

Soot %	%	**0.1**	---	---	---
Nitration (PA)	%	**101**	---	---	---
Sulfation (PA)	%	**112**	---	---	---
Glycol	%	**NEG**	---	---	---
Fuel	%	**0.8**	---	---	---
Silicon	ppm	**8**	---	---	---
Sodium	ppm	**4**	---	---	---
Potassium	ppm	**2**	---	---	---

WEAR METALS

Iron	ppm	**7**	---	---	---
Copper	ppm	**241**	---	---	---
Lead	ppm	**1**	---	---	---
Tin	ppm	**1**	---	---	---
Aluminum	ppm	**3**	---	---	---
Chromium	ppm	**<1**	---	---	---
Molybdenum	ppm	**42**	---	---	---
Nickel	ppm	**0**	---	---	---
Titanium	ppm	**<1**	---	---	---
Silver	ppm	**0**	---	---	---
Manganese	ppm	**1**	---	---	---
Vanadium	ppm	**0**	---	---	---

ADDITIVES

Calcium	ppm	**1201**	---	---	---
Magnesium	ppm	**838**	---	---	---
Zinc	ppm	**792**	---	---	---
Phosphorus	ppm	**663**	---	---	---
Barium	ppm	**23**	---	---	---
Boron	ppm	**85**	---	---	---

Diagnosis

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. 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: LEC0082
Unique No: 10716194
Signed: Jonathan Hester
Report Date: 02 Nov 2023

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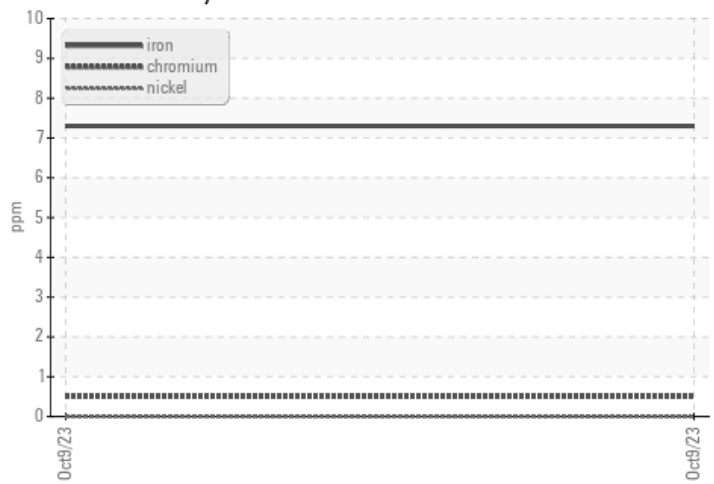
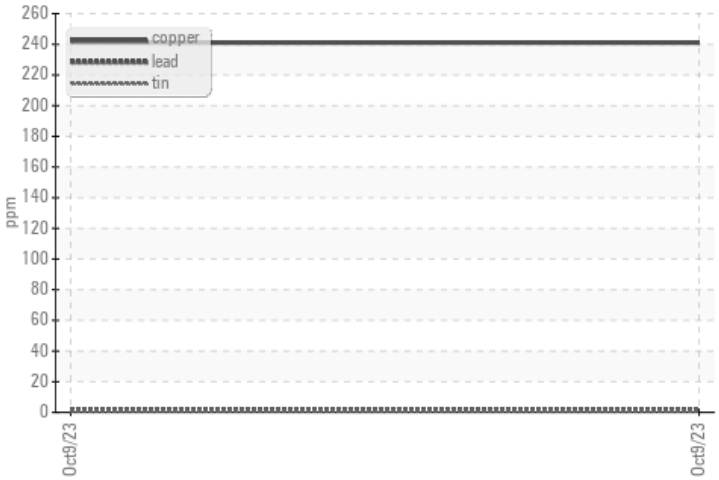
GRAPHS

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C

Base Number