

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH50 1216-119204 - Diesel Engine

Sample No: LHMC133241

Oil Type: LIEBHERR 10W30



SAMPLE INFORMATION

Sample Number	LHMC133241	LHMC141002	---	---
Sample Date	24 Feb 2024	02 Feb 2021	---	---
Machine Hours	8819	1119	---	---
Oil Hours	0	1119	---	---
Oil Changed	N/A	Changed	---	---
Sample Status	NORMAL	ABNORMAL	---	---

ALTER TRADING

2424 CLARKE STREET

PEORIA, IL

US 61602

Contact: Service Manager



OIL CONDITION

Visc @ 100°C	cSt	● 10.8	● 11.8	---	---
Base Number (BN)	mg KOH/g	● 7.3	---	---	---
Oxidation (PA)	%	106	178	---	---

T:

F:

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination 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.



CONTAMINATION

Water	%	NEG	NEG	---	---
Soot %	%	● 0.1	● 0.1	---	---
Nitration (PA)	%	91	98	---	---
Sulfation (PA)	%	63	100	---	---
Glycol	%	NEG	NEG	---	---
Fuel	%	<1.0	● 1.6	---	---
Silicon	ppm	● 10	● 11	---	---
Sodium	ppm	● 2	● 4	---	---
Potassium	ppm	● <1	● 5	---	---



WEAR METALS

Iron	ppm	● 6	● 15	---	---
Copper	ppm	● 2	● 306	---	---
Lead	ppm	● <1	● 6	---	---
Tin	ppm	● <1	● 0	---	---
Aluminum	ppm	● 1	● 2	---	---
Chromium	ppm	● <1	● <1	---	---
Molybdenum	ppm	● 43	● 45	---	---
Nickel	ppm	● <1	● 1	---	---
Titanium	ppm	0	<1	---	---
Silver	ppm	● 0	0	---	---
Manganese	ppm	<1	● 1	---	---
Vanadium	ppm	<1	0	---	---



ADDITIVES

Calcium	ppm	● 1762	● 1403	---	---
Magnesium	ppm	● 529	● 921	---	---
Zinc	ppm	● 961	● 891	---	---
Phosphorus	ppm	● 804	● 733	---	---
Barium	ppm	● 0	● 31	---	---
Boron	ppm	● 35	● 57	---	---

Depot: ALTPEO

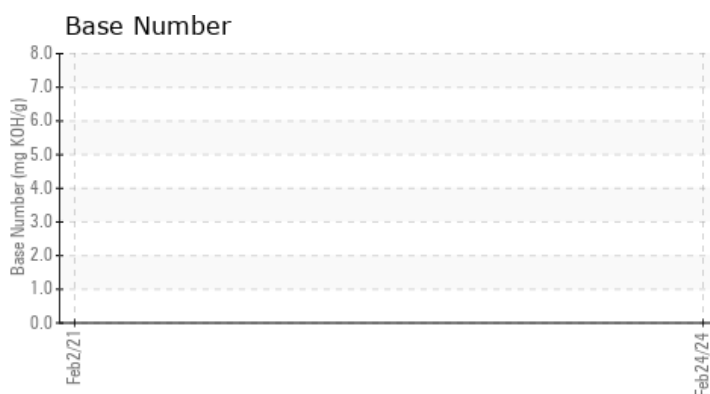
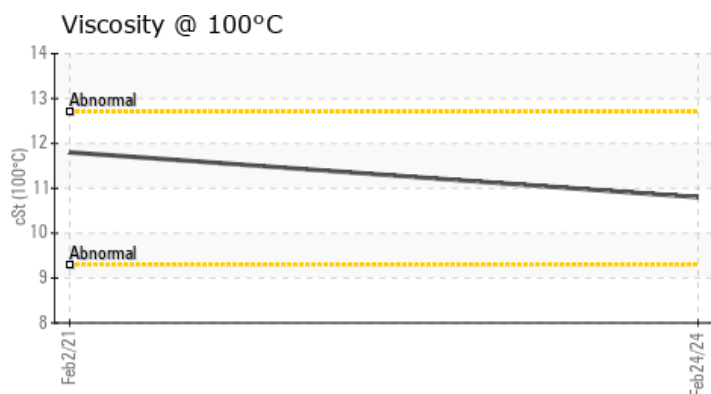
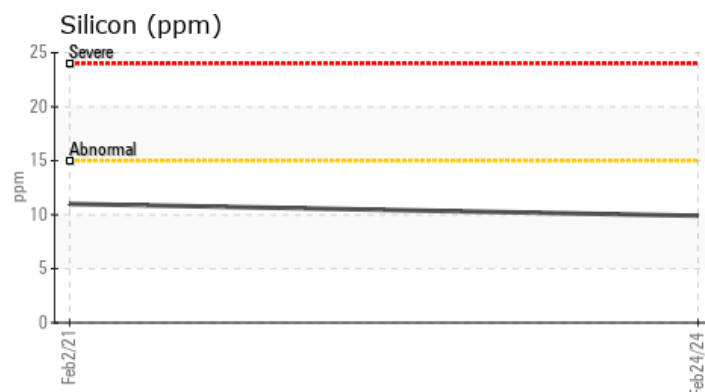
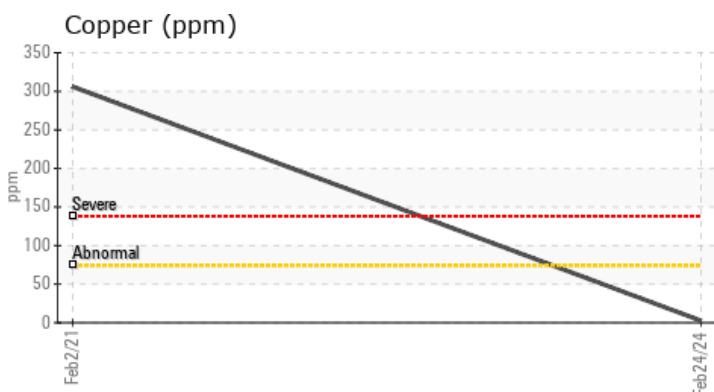
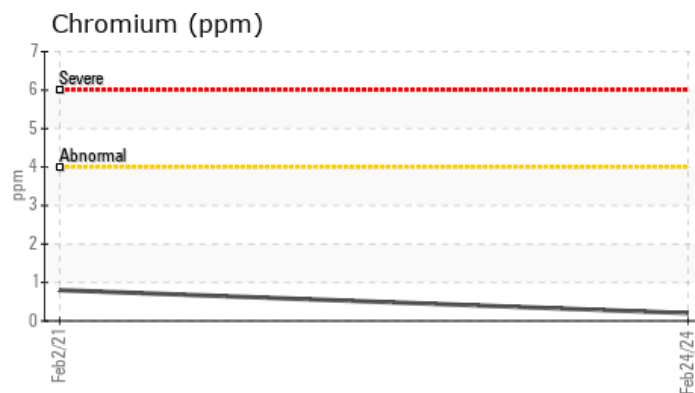
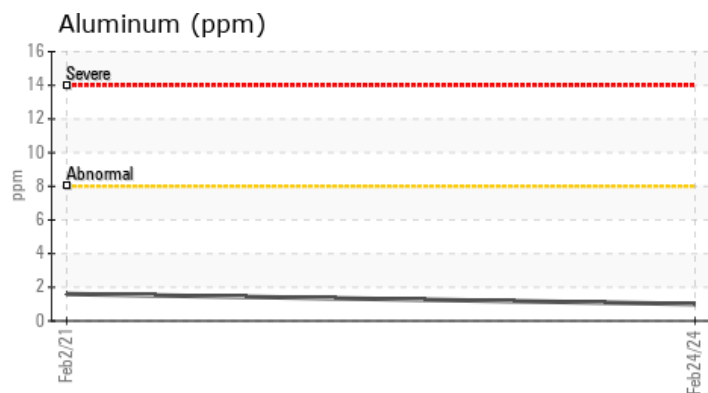
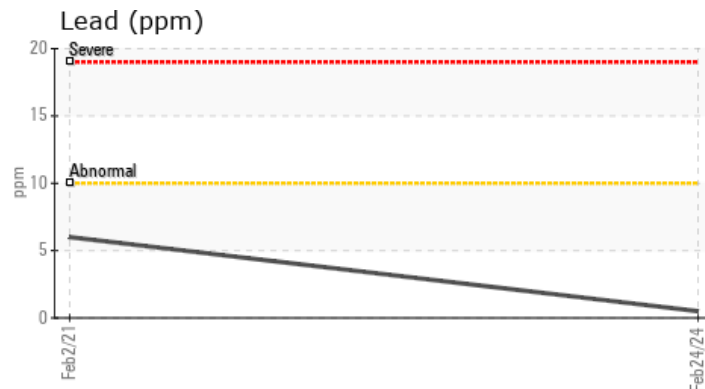
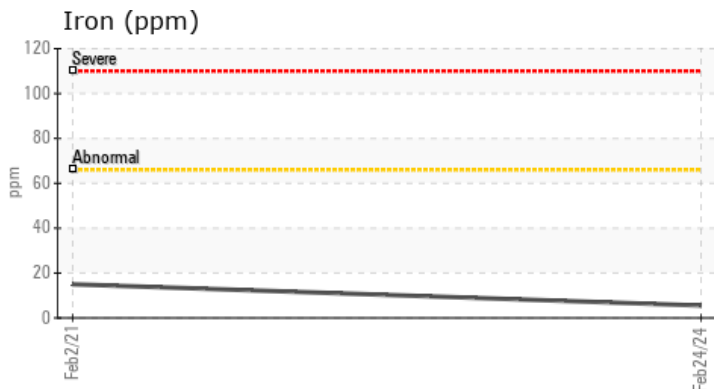
Unique No: 10910070

Signed: Jonathan Hester

Report Date: 05 Mar 2024



GRAPHS



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH50 1216-119204 - Hydraulic System

Sample No: LHMC141066

Oil Type: {unknown}



ALTER TRADING
2424 CLARKE STREET
PEORIA, IL
US 61602
Contact: Service Manager

T:
F:



Sample Information

Sample Number	LHMC141066	---	---	---
Sample Date	02 Feb 2021	---	---	---
Machine Hours	1119	---	---	---
Oil Hours	1119	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	44.7	---	---	---
Acid Number (AN)	mg KOH/g	1.109	---	---	---



Contamination

Water	%	NEG	---	---	---
Particles >4µm		13192	---	---	---
Particles >6µm		2870	---	---	---
Particles >14µm		201	---	---	---
ISO 4406:1999 (c)		21/19/15	---	---	---
Silicon	ppm	0	---	---	---
Sodium	ppm	0	---	---	---
Potassium	ppm	2	---	---	---

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



Wear Metals

Iron	ppm	23	---	---	---
Copper	ppm	2	---	---	---
Lead	ppm	<1	---	---	---
Tin	ppm	0	---	---	---
Aluminum	ppm	0	---	---	---
Chromium	ppm	<1	---	---	---
Molybdenum	ppm	0	---	---	---
Nickel	ppm	0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	<1	---	---	---
Manganese	ppm	<1	---	---	---
Vanadium	ppm	0	---	---	---



Additives

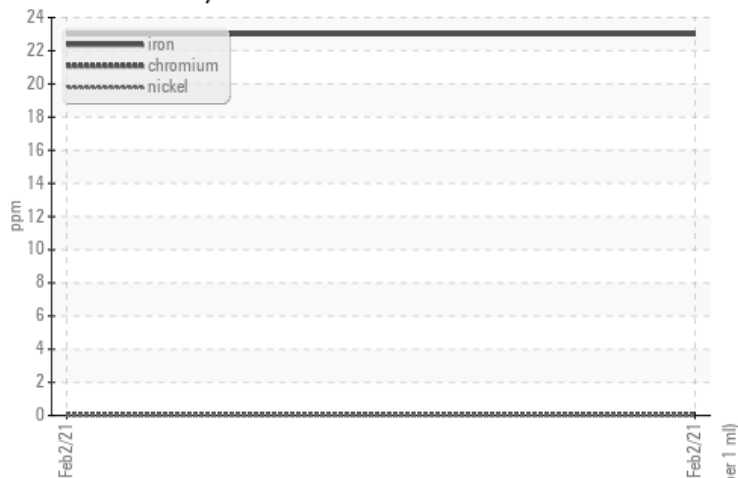
Calcium	ppm	1438	---	---	---
Magnesium	ppm	6	---	---	---
Zinc	ppm	742	---	---	---
Phosphorus	ppm	665	---	---	---
Barium	ppm	0	---	---	---
Boron	ppm	<1	---	---	---

Depot: ALTPEO
Unique No: 9365741
Signed: Don Baldrige
Report Date: 12 Feb 2021

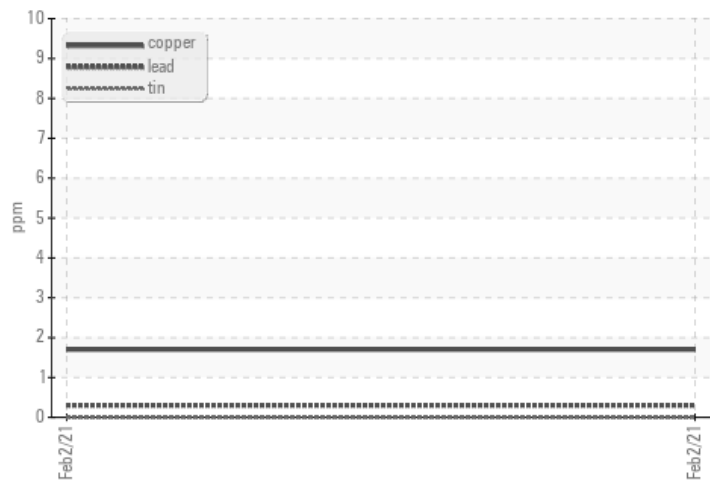


Graphs

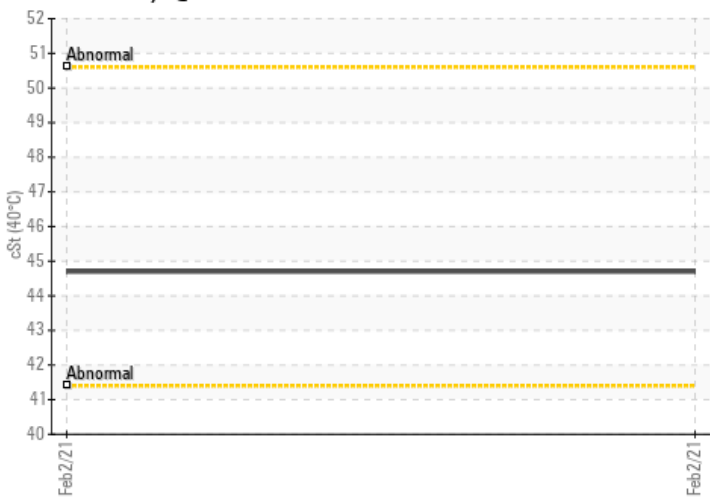
Ferrous Alloys



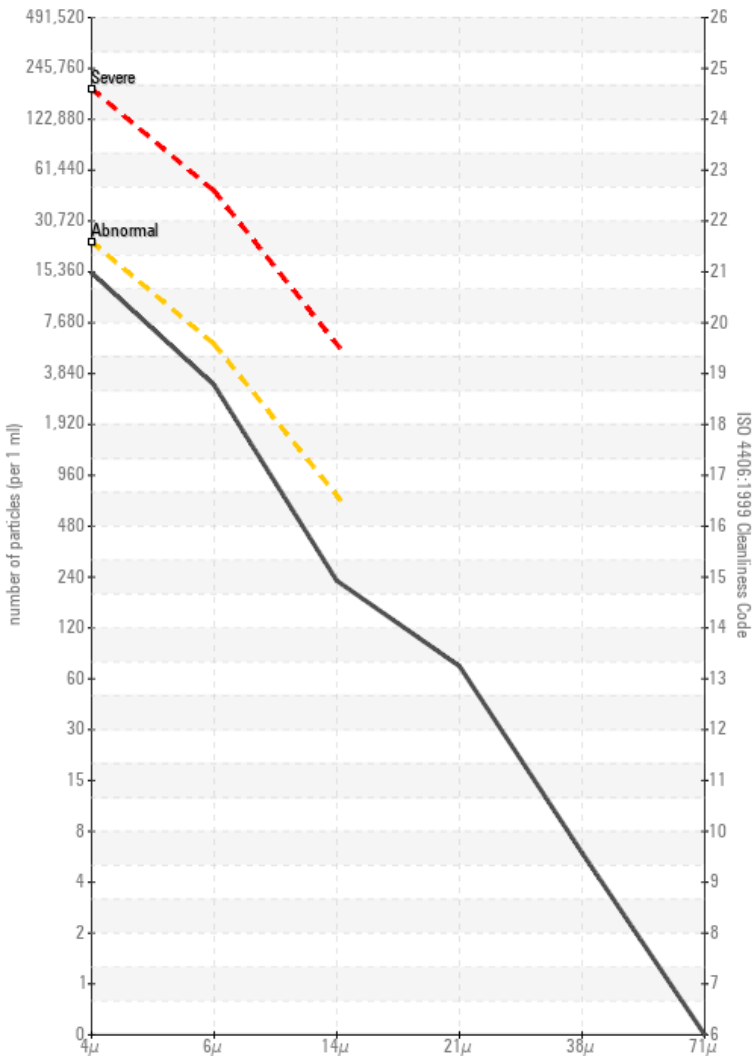
Non-ferrous Metals



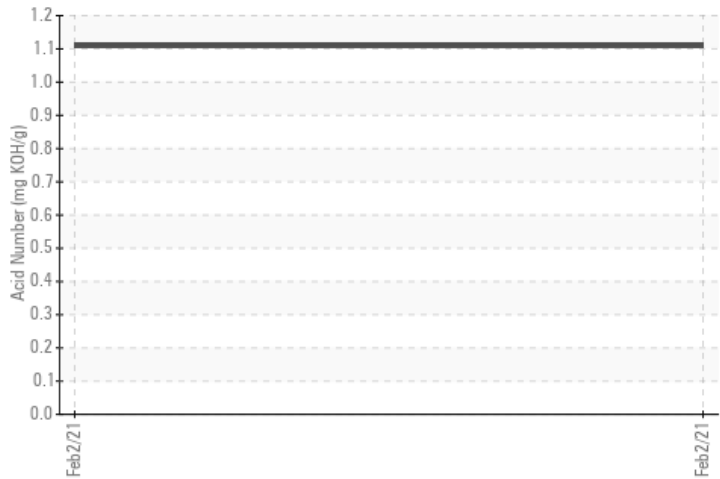
Viscosity @ 40°C



Particle Count



Acid Number



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH50 1216-119204 - Front Differential

Sample No: LHMC140503

Oil Type: LIEBHERR GEAR BASIC 90 LS



ALTER TRADING
 2424 CLARKE STREET
 PEORIA, IL
 US 61602
 Contact: Service Manager

T:
 F:



Sample Information

Sample Number	LHMC140503	---	---	---
Sample Date	02 Feb 2021	---	---	---
Machine Hours	1119	---	---	---
Oil Hours	1119	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 168	---	---	---
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Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 14	---	---	---
Sodium	ppm	● 5	---	---	---
Potassium	ppm	● 0	---	---	---



Wear Metals

Iron	ppm	● 103	---	---	---
Copper	ppm	● 36	---	---	---
Lead	ppm	● <1	---	---	---
Tin	ppm	● 0	---	---	---
Aluminum	ppm	● 1	---	---	---
Chromium	ppm	● <1	---	---	---
Molybdenum	ppm	● <1	---	---	---
Nickel	ppm	● 0	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 3	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 158	---	---	---
Magnesium	ppm	● 4	---	---	---
Zinc	ppm	● 48	---	---	---
Phosphorus	ppm	● 2042	---	---	---
Barium	ppm	● 2	---	---	---
Boron	ppm	● 8	---	---	---

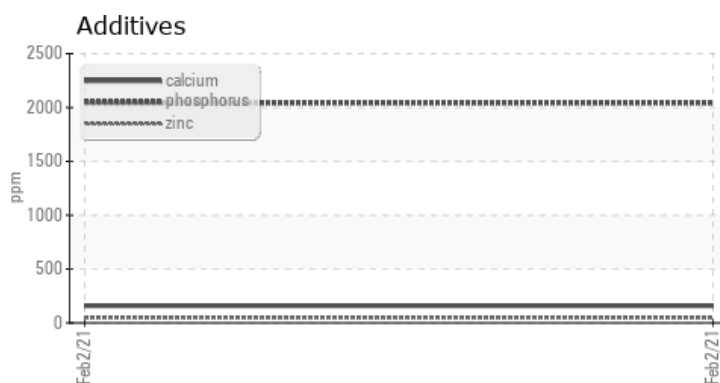
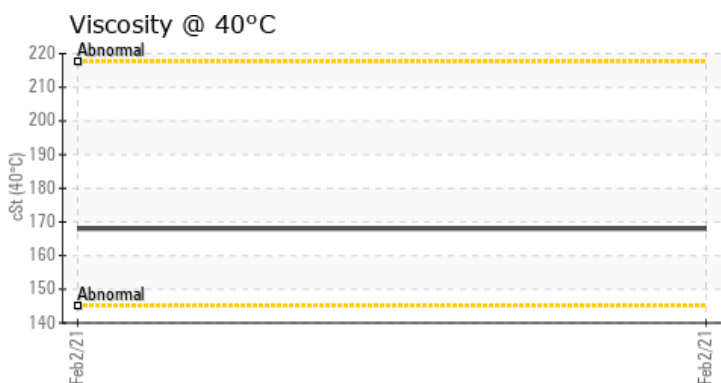
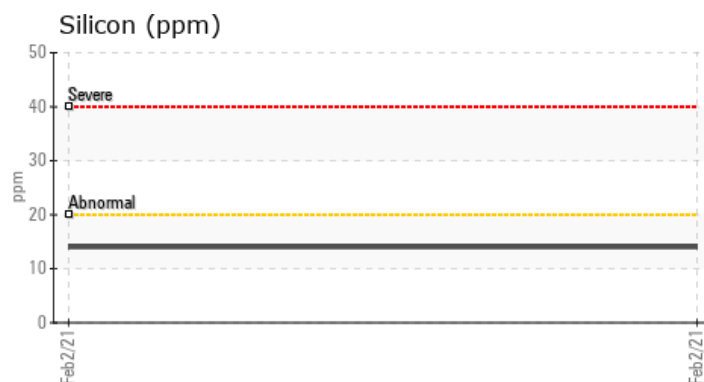
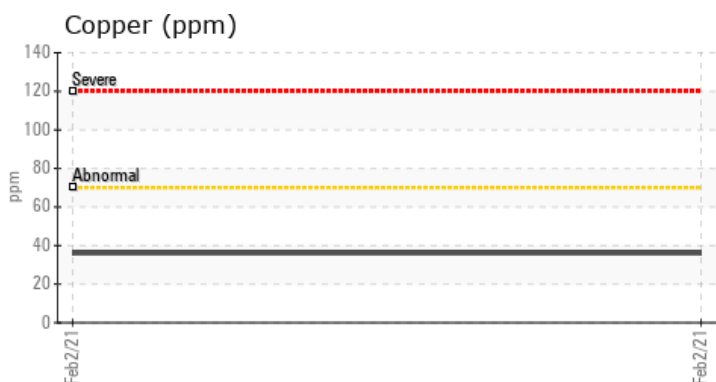
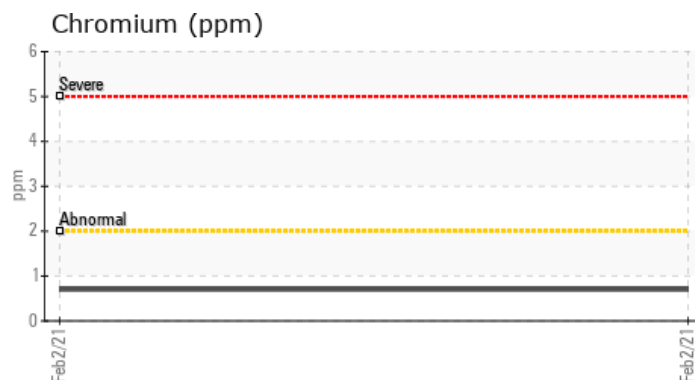
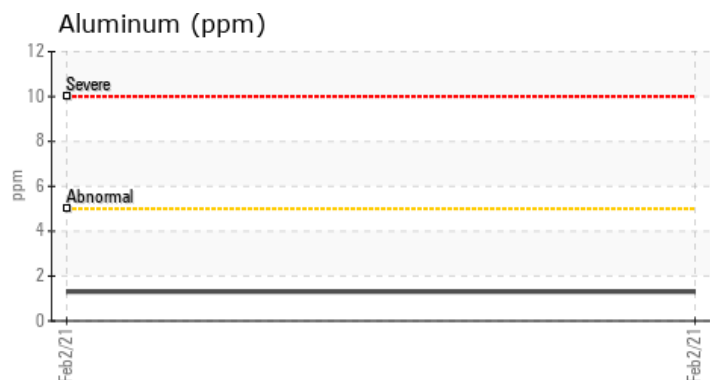
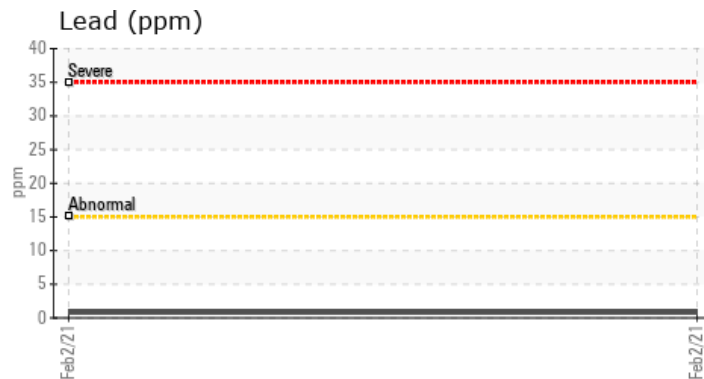
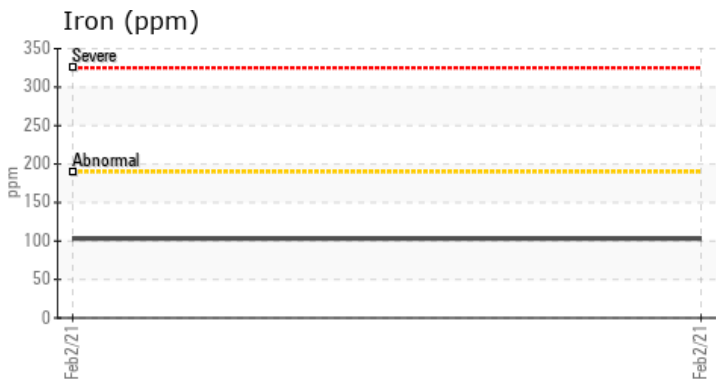
Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.

Depot: ALTPEO
 Unique No: 9364675
 Signed: Wes Davis
 Report Date: 11 Feb 2021



Graphs



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH50 1216-119204 - Splitter Box

Sample No: LHMC133218

Oil Type: LIEBHERR GEAR BASIC 90 LS



SAMPLE INFORMATION

Sample Number	LHMC133218	---	---	---
Sample Date	24 Feb 2024	---	---	---
Machine Hours	8819	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	ABNORMAL	---	---	---

ALTER TRADING
 2424 CLARKE STREET
 PEORIA, IL
 US 61602
 Contact: Service Manager



OIL CONDITION

Visc @ 40°C	cSt	● 147	---	---	---
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F:



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	● 5	---	---	---
Sodium	ppm	● 3	---	---	---
Potassium	ppm	● 1	---	---	---

Diagnosis

No corrective action is recommended at this time. Resample at the next service interval to monitor. Gear wear is indicated. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.



WEAR METALS

Iron	ppm	● 133	---	---	---
Copper	ppm	● 1	---	---	---
Lead	ppm	● 0	---	---	---
Tin	ppm	● <1	---	---	---
Aluminum	ppm	● 1	---	---	---
Chromium	ppm	● 1	---	---	---
Molybdenum	ppm	● 0	---	---	---
Nickel	ppm	● <1	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 2	---	---	---
Vanadium	ppm	0	---	---	---



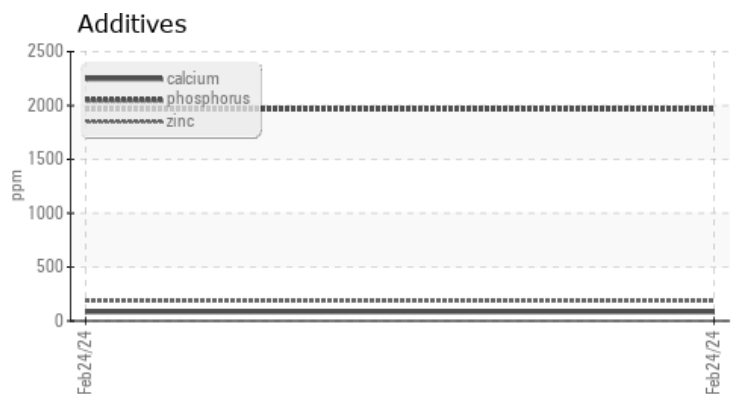
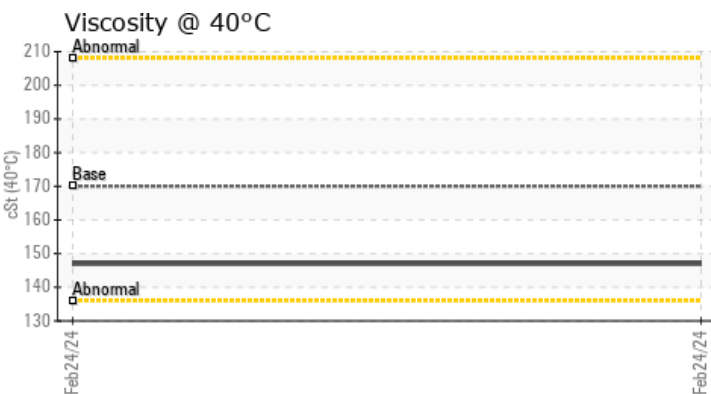
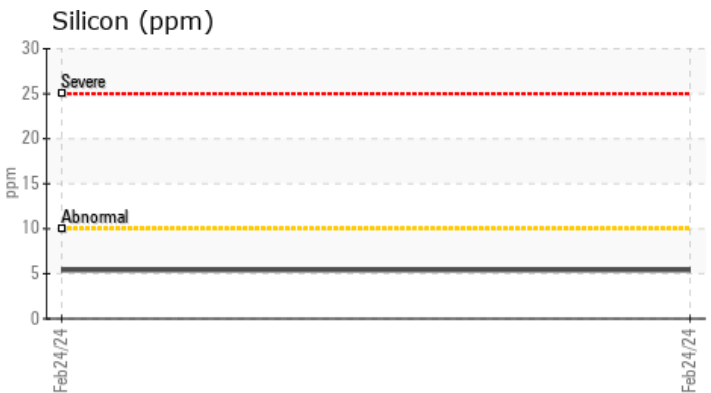
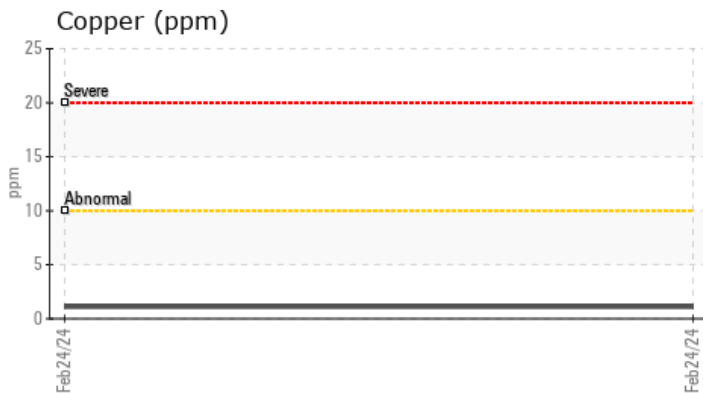
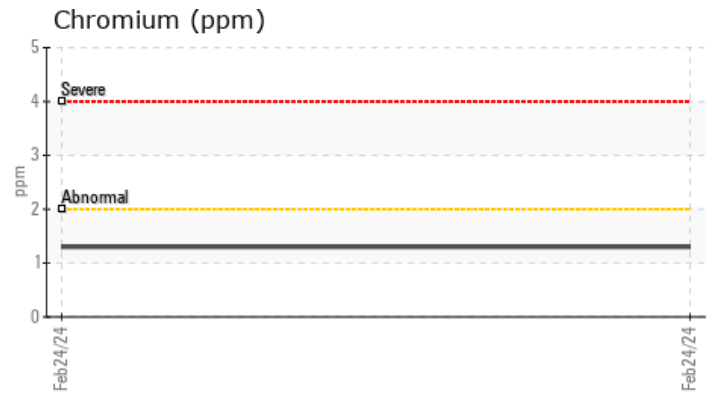
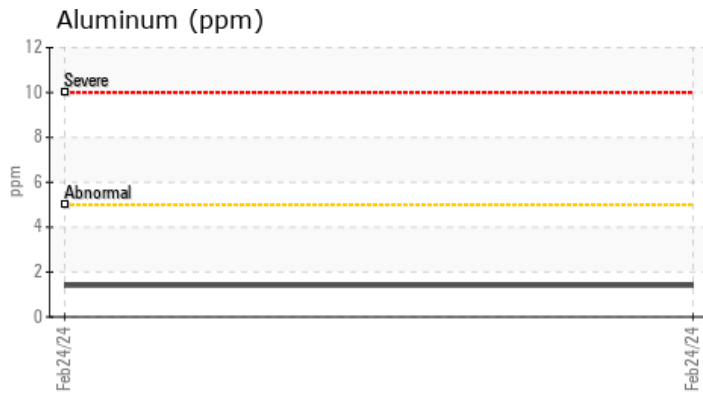
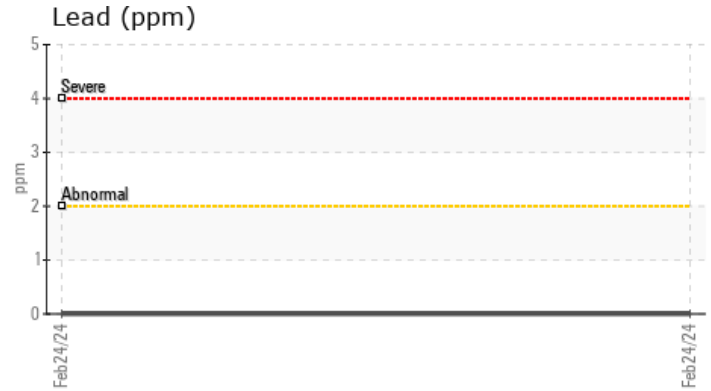
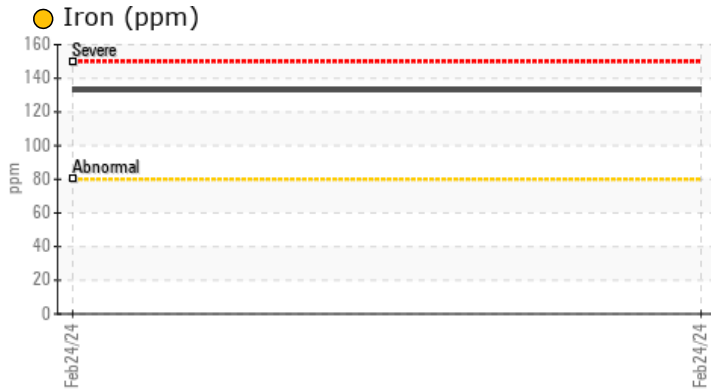
ADDITIVES

Calcium	ppm	● 84	---	---	---
Magnesium	ppm	● 7	---	---	---
Zinc	ppm	● 185	---	---	---
Phosphorus	ppm	● 1965	---	---	---
Barium	ppm	● <1	---	---	---
Boron	ppm	● 110	---	---	---

Depot: ALTPEO
Unique No: 10910284
Signed: Sean Felton
Report Date: 05 Mar 2024



GRAPHS



LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR LH50 1216-119204 - Rear Differential

Sample No: LHMC141182

Oil Type: LIEBHERR GEAR BASIC 90 LS



ALTER TRADING
 2424 CLARKE STREET
 PEORIA, IL
 US 61602
 Contact: Service Manager



Sample Information

Sample Number	LHMC141182	---	---	---
Sample Date	02 Feb 2021	---	---	---
Machine Hours	1119	---	---	---
Oil Hours	1119	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---



Oil Condition

Visc @ 40°C	cSt	● 185	---	---	---
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T:
F:



Contamination

Water	%	NEG	---	---	---
Silicon	ppm	● 5	---	---	---
Sodium	ppm	● 3	---	---	---
Potassium	ppm	● 0	---	---	---

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the component. The condition of the oil is acceptable for the time in service.



Wear Metals

Iron	ppm	● 28	---	---	---
Copper	ppm	● 14	---	---	---
Lead	ppm	● 1	---	---	---
Tin	ppm	● 0	---	---	---
Aluminum	ppm	● 2	---	---	---
Chromium	ppm	● <1	---	---	---
Molybdenum	ppm	● 0	---	---	---
Nickel	ppm	● <1	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	● 1	---	---	---
Vanadium	ppm	0	---	---	---



Additives

Calcium	ppm	● 5	---	---	---
Magnesium	ppm	● <1	---	---	---
Zinc	ppm	● 12	---	---	---
Phosphorus	ppm	● 1062	---	---	---
Barium	ppm	● 353	---	---	---
Boron	ppm	● 1	---	---	---

Depot: ALTPEO
Unique No: 9364670
Signed: Angela Borella
Report Date: 11 Feb 2021



Graphs

