



# LIEBHERR

## OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>



Machine Id  
**LIEBHERR LH110 1227-155752**  
Component  
**Diesel Engine**  
Fluid  
**DIESEL ENGINE OIL SAE 15W40 (--- GAL)**

### RECOMMENDATION

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>LH0267275</b>	LH0267271	LH0267540
Sample Date		Client Info		<b>10 Jun 2024</b>	08 Jun 2024	20 May 2024
Machine Age	hrs	Client Info		<b>2998</b>	2768	2578
Oil Age	hrs	Client Info		<b>420</b>	190	547
Filter Age	hrs	Client Info		<b>420</b>	190	547
Oil Changed		Client Info		<b>Changed</b>	Not Changd	Changed
Filter Changed		Client Info		<b>Changed</b>	Not Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>4</b>	3	5
Chromium	ppm	ASTM D5185m	>5	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>5	<b>&lt;1</b>	<1	<1
Titanium	ppm	ASTM D5185m		<b>2</b>	2	<1
Silver	ppm	ASTM D5185m	>3	<b>0</b>	0	1
Aluminum	ppm	ASTM D5185m	>15	<b>3</b>	3	4
Lead	ppm	ASTM D5185m	>30	<b>&lt;1</b>	<1	1
Copper	ppm	ASTM D5185m	>125	<b>&lt;1</b>	<1	2
Tin	ppm	ASTM D5185m	>5	<b>&lt;1</b>	<1	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

### CONTAMINATION

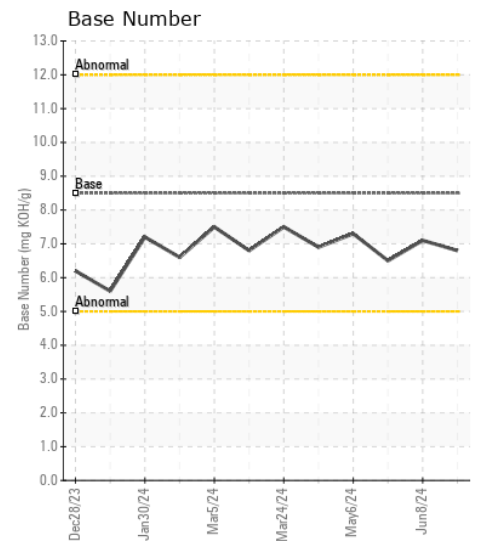
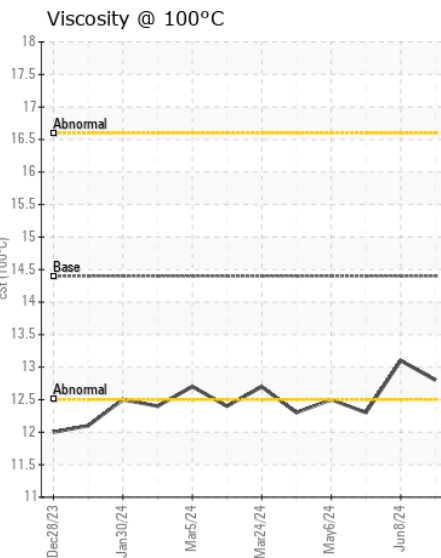
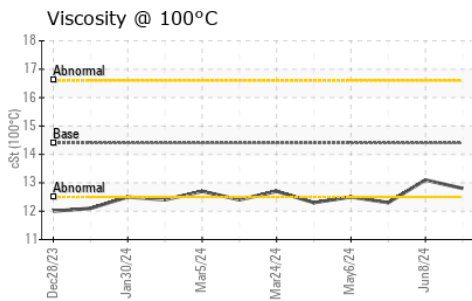
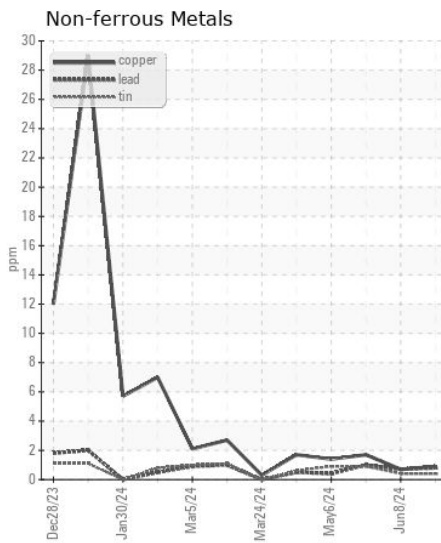
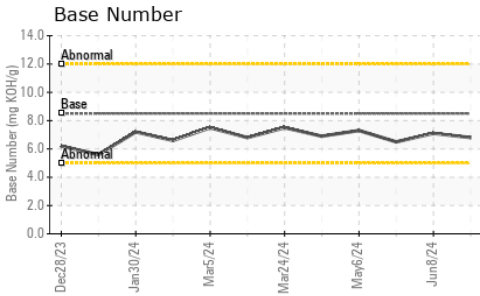
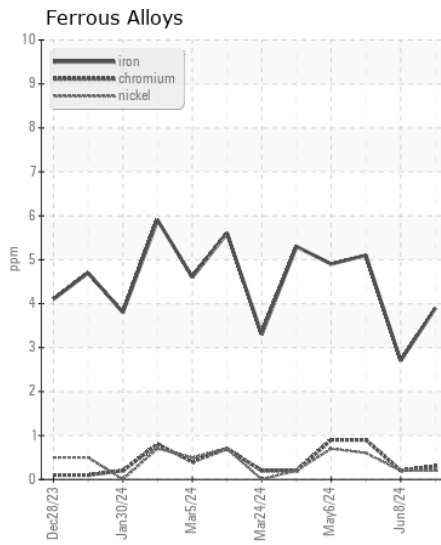
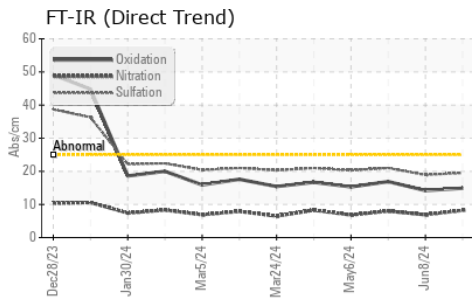
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>60	<b>8</b>	8	10
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	2	3
Fuel		WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.1</b>	0	0.1
Nitration	Abs/cm	*ASTM D7624	>20	<b>8.2</b>	6.9	8.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>19.5</b>	18.9	21.0
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG

### FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>158	<b>0</b>	0	3
Boron	ppm	ASTM D5185m	250	<b>219</b>	260	310
Barium	ppm	ASTM D5185m	10	<b>&lt;1</b>	<1	1
Molybdenum	ppm	ASTM D5185m	100	<b>86</b>	85	82
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	450	<b>261</b>	236	408
Calcium	ppm	ASTM D5185m	3000	<b>1790</b>	1780	1312
Phosphorus	ppm	ASTM D5185m	1150	<b>1038</b>	1011	976
Zinc	ppm	ASTM D5185m	1350	<b>1202</b>	1156	1157
Sulfur	ppm	ASTM D5185m	4250	<b>3558</b>	3504	3337
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>14.9</b>	14.2	16.9
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	<b>6.8</b>	7.1	6.5
Visc @ 100°C	cSt	ASTM D445	14.4	<b>12.8</b>	13.1	12.3



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : LH0267275 **Received** : 20 Jun 2024  
**Lab Number** : 06215451 **Tested** : 21 Jun 2024  
**Unique Number** : 11088315 **Diagnosed** : 21 Jun 2024 - Wes Davis  
**Test Package** : CONST ( Additional Tests: TBN )

**KINDER MORGAN**  
 4301 IVERSON  
 TRINITY, AL  
 US 35601

Contact: RICKY JOHNSON  
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To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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