



# LIEBHERR

## OIL ANALYSIS REPORT

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



Machine Id  
**LIEBHERR A944B 016166-744**  
Component  
**Diesel Engine**  
Fluid  
**CONOCO PHILLIPS GUARDOL ECT 15W40 (6 GAL)**

### RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>LH0273277</b>	LH0273208	LH0273249
Sample Date		Client Info		<b>03 May 2024</b>	13 Mar 2024	11 Jan 2024
Machine Age	hrs	Client Info		<b>50152</b>	49847	49427
Oil Age	hrs	Client Info		<b>300</b>	250	250
Filter Age	hrs	Client Info		<b>300</b>	250	250
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>ATTENTION</b>	ATTENTION	ATTENTION

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>13</b>	19	11
Chromium	ppm	ASTM D5185m	>5	<b>3</b>	<1	<1
Nickel	ppm	ASTM D5185m	>5	<b>0</b>	<1	<1
Titanium	ppm	ASTM D5185m		<b>8</b>	4	7
Silver	ppm	ASTM D5185m	>3	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	3	3
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>	0	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

### CONTAMINATION

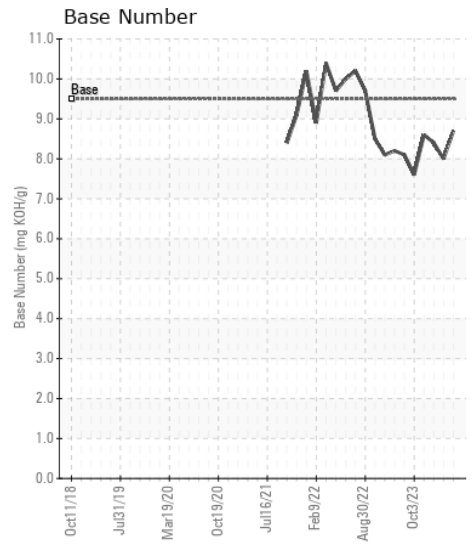
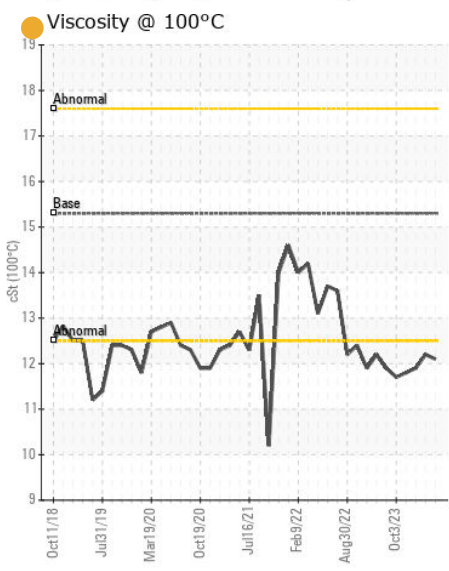
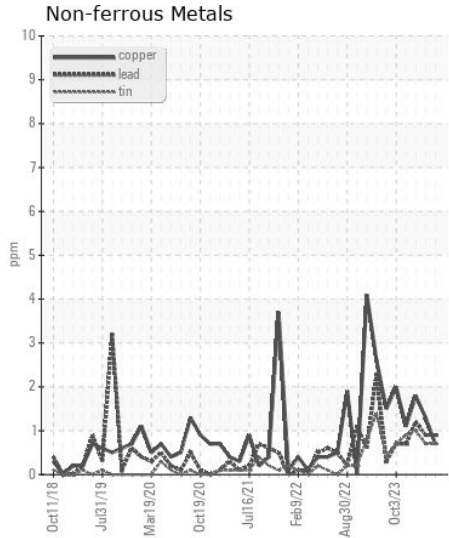
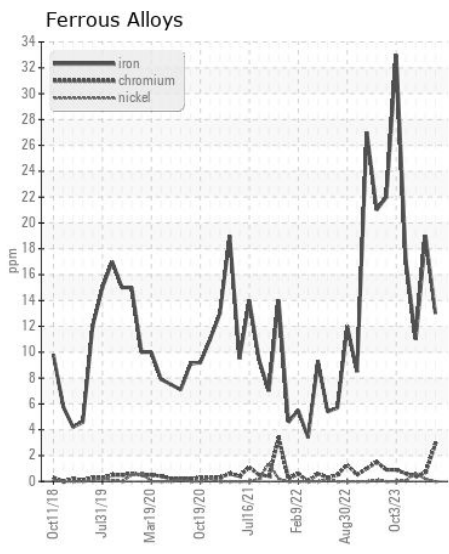
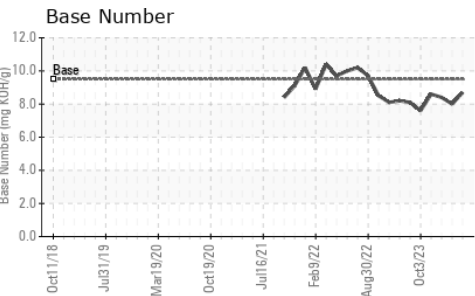
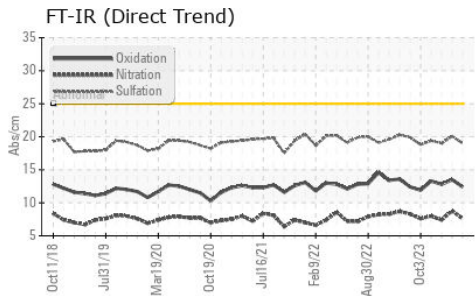
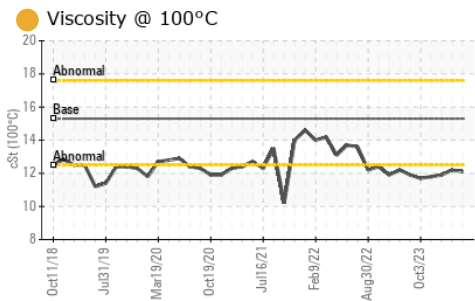
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>60	<b>7</b>	8	6
Potassium	ppm	ASTM D5185m	>20	<b>3</b>	3	4
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>0.8</b>	1.1	0.8
Nitration	Abs/cm	*ASTM D7624	>20	<b>7.6</b>	8.8	7.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>19.0</b>	20.1	19.0
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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sodium	ppm	ASTM D5185m		<b>2</b>	2	2
Boron	ppm	ASTM D5185m	85	<b>66</b>	60	35
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>26</b>	18	38
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	350	<b>675</b>	732	658
Calcium	ppm	ASTM D5185m	1800	<b>1460</b>	1465	1395
Phosphorus	ppm	ASTM D5185m	1000	<b>1081</b>	1184	1051
Zinc	ppm	ASTM D5185m	1100	<b>1231</b>	1298	1226
Sulfur	ppm	ASTM D5185m	3500	<b>4051</b>	4214	3349
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>12.4</b>	13.5	12.8
Base Number (BN)	mg KOH/g	ASTM D2896	9.5	<b>8.7</b>	8.0	8.4
Visc @ 100°C	cSt	ASTM D445	15.3	<b>12.1</b>	12.2	11.9



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : LH0273277 **Received** : 28 May 2024  
**Lab Number** : 06193385 **Tested** : 30 May 2024  
**Unique Number** : 11050137 **Diagnosed** : 30 May 2024 - Sean Felton  
**Test Package** : CONST ( Additional Tests: TBN )

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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)