



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
141701

Component
Diesel Engine

Fluid
LIEBHERR MOTOROIL 10W-40 LOW ASH (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LM0000443	LM0000450	LM0000377
Sample Date		Client Info		03 Jan 2024	29 Nov 2023	05 Nov 2023
Machine Age	hrs	Client Info		10943	10519	0
Oil Age	hrs	Client Info		0	500	0
Filter Age	hrs	Client Info		0	500	0
Oil Changed		Client Info		Changed	Changed	N/A
Filter Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	6	6	10
Chromium	ppm	ASTM D5185m	>5	<1	0	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>15	2	3	2
Lead	ppm	ASTM D5185m	>30	0	0	1
Copper	ppm	ASTM D5185m	>125	8	17	46
Tin	ppm	ASTM D5185m	>5	0	<1	1
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

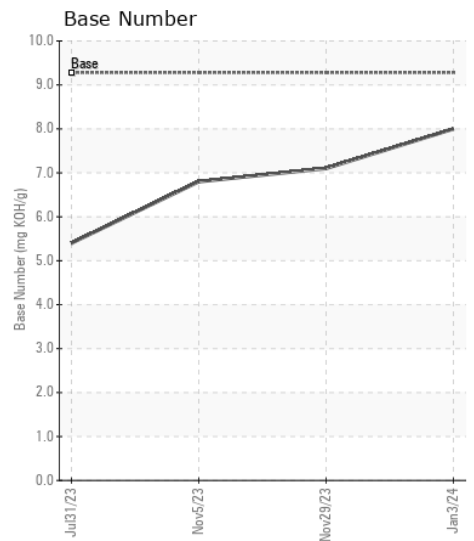
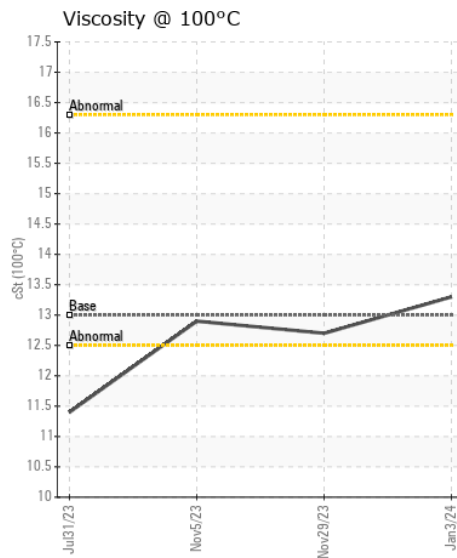
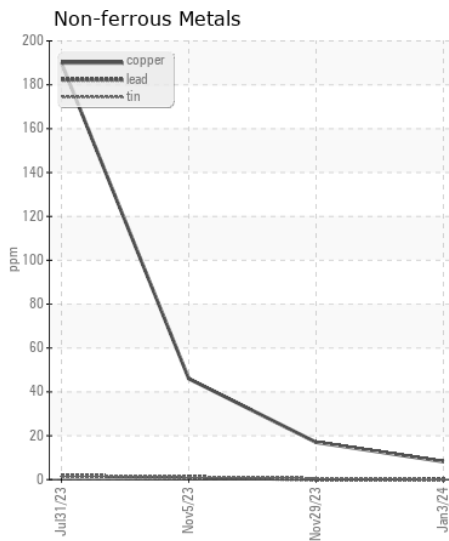
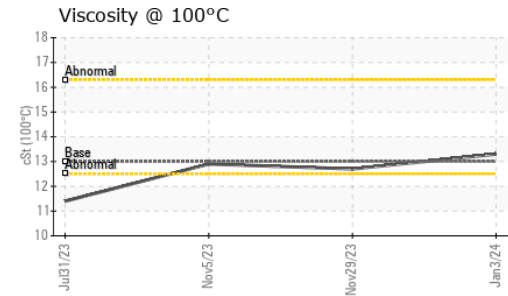
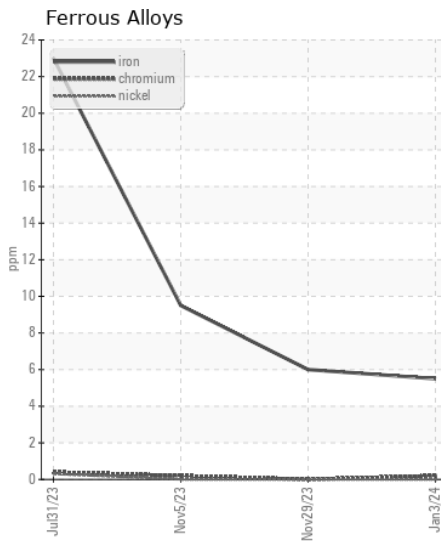
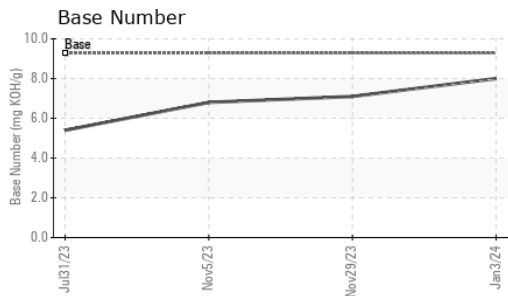
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>60	3	4	5
Potassium	ppm	ASTM D5185m	>20	3	4	2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	8.5	8.3	9.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.1	20.4	22.3
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	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		<1	2	2
Boron	ppm	ASTM D5185m	169	185	135	65
Barium	ppm	ASTM D5185m	0	0	2	3
Molybdenum	ppm	ASTM D5185m	2	2	4	6
Manganese	ppm	ASTM D5185m	<1	0	<1	1
Magnesium	ppm	ASTM D5185m	724	853	777	896
Calcium	ppm	ASTM D5185m	1323	1396	1274	1484
Phosphorus	ppm	ASTM D5185m	678	802	782	848
Zinc	ppm	ASTM D5185m	776	944	900	1008
Sulfur	ppm	ASTM D5185m	2859	4271	3861	3533
Oxidation	Abs/.1mm	*ASTM D7414	>25	19.0	20.6	24.3
Base Number (BN)	mg KOH/g	ASTM D2896	9.28	8.0	7.1	6.8
Visc @ 100°C	cSt	ASTM D445	13.0	13.3	12.7	12.9



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LM0000443 **Received** : 10 Jan 2024
Lab Number : 06057213 **Diagnosed** : 11 Jan 2024
Unique Number : 10823162 **Diagnostician** : Wes Davis
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)