



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
LIEBHERR R944CEW 035017-793
Component
Diesel Engine
Fluid
PENNZOIL 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0268830	LHMC120303	LHMC118435
Sample Date		Client Info		26 Jan 2024	24 Jan 2018	24 Oct 2017
Machine Age	hrs	Client Info		15729	11966	11570
Oil Age	hrs	Client Info		500	0	0
Filter Age	hrs	Client Info		500	0	0
Oil Changed		Client Info		Changed	N/A	Changed
Filter Changed		Client Info		Changed	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	36	9	14
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>15	2	2	1
Lead	ppm	ASTM D5185m	>30	2	0	<1
Copper	ppm	ASTM D5185m	>125	5	5	6
Tin	ppm	ASTM D5185m	>5	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

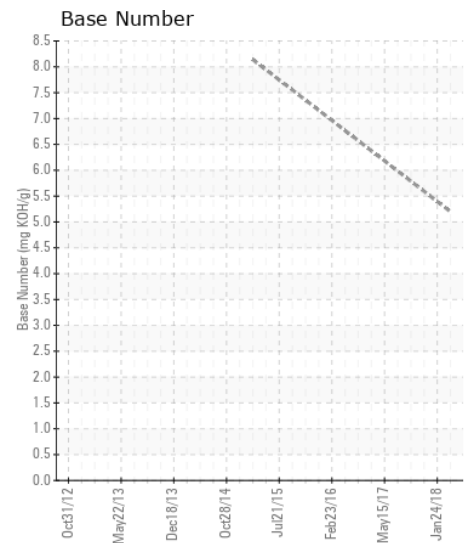
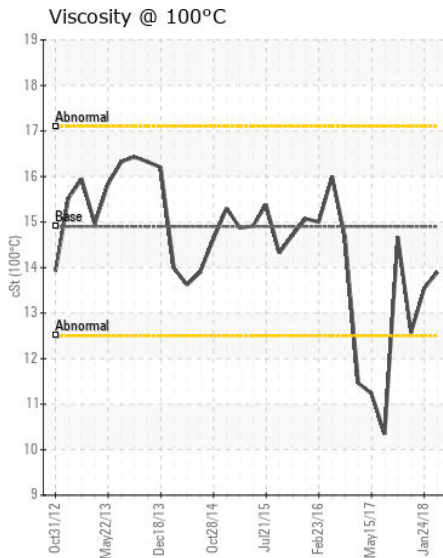
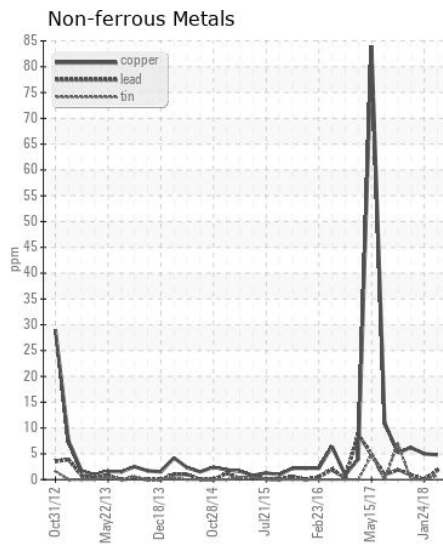
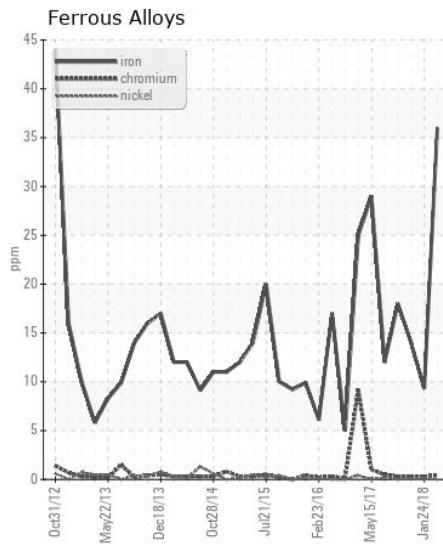
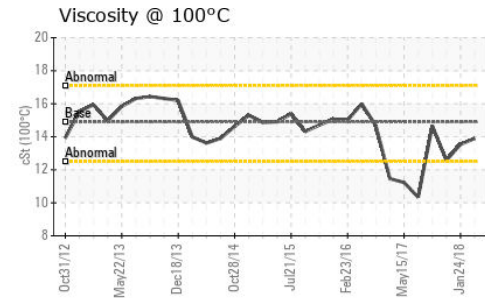
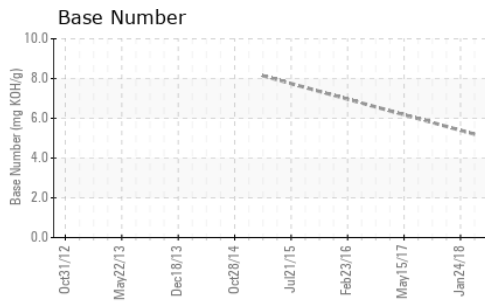
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>60	6	8	4
Potassium	ppm	ASTM D5185m	>20	2	5	1
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	2.7	0.4	0.5
Nitration	Abs/cm	*ASTM D7624	>20	11.3	6.	6.
Sulfation	Abs/.1mm	*ASTM D7415	>30	26.2	18.	13.
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		2	4	4
Boron	ppm	ASTM D5185m	160	35	296	42
Barium	ppm	ASTM D5185m	0.1	<1	0	0
Molybdenum	ppm	ASTM D5185m	105	27	74	37
Manganese	ppm	ASTM D5185m		<1	<1	1
Magnesium	ppm	ASTM D5185m	301	731	427	828
Calcium	ppm	ASTM D5185m	2920	1347	1282	925
Phosphorus	ppm	ASTM D5185m	1042	805	752	857
Zinc	ppm	ASTM D5185m	1472	923	1039	931
Sulfur	ppm	ASTM D5185m	4076	2904	2687	1158
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.4	12.	11.
Base Number (BN)	mg KOH/g	ASTM D2896		5.2	---	---
Visc @ 100°C	cSt	ASTM D445	14.9	13.9	13.54	12.57



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LH0268830 **Received** : 13 Feb 2024
Lab Number : 06087926 **Tested** : 14 Feb 2024
Unique Number : 10875371 **Diagnosed** : 14 Feb 2024 - Wes Davis
Test Package : CONST (Additional Tests: TBN)

MIDDLE RIVER MARINE
 1771 SOUTH TORRENCE AVE
 CHICAGO, IL
 US 60617
 Contact: Scott Molitor
 scottmolitor@gomidriver.com

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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F: