LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
LIEBHERR LH80M 1218-157090
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

WEAR

All component wear rates are normal.

CONTAMINATION

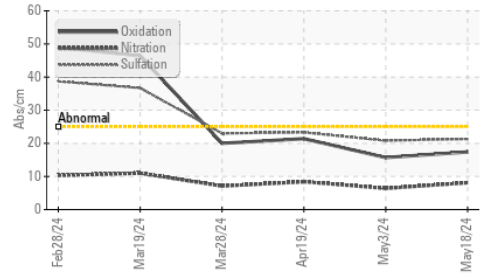
There is no indication of any contamination in the oil.

FLUID CONDITION

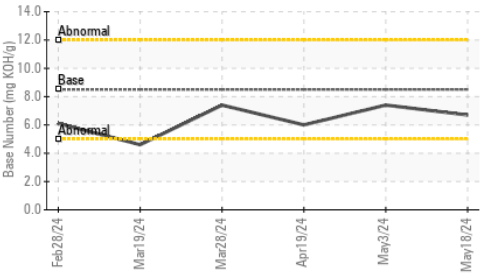
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0282872	LH0282891	LH0282883
Sample Date		Client Info		18 May 2024	03 May 2024	19 Apr 2024
Machine Age	hrs	Client Info		1559	1198	997
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	Changed
Filter Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>100	7	4	5
Chromium	ppm	ASTM D5185m	>5	1	<1	0
Nickel	ppm	ASTM D5185m	>5	<1	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	1	1	0
Aluminum	ppm	ASTM D5185m	>15	5	3	2
Lead	ppm	ASTM D5185m	>30	1	<1	2
Copper	ppm	ASTM D5185m	>125	14	9	54
Tin	ppm	ASTM D5185m	>5	1	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>60	13	9	9
Potassium	ppm	ASTM D5185m	>20	4	3	<1
Fuel	%	ASTM D3524	>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	8.1	6.4	8.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.3	20.8	23.3
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
Sodium	ppm	ASTM D5185m	>158	4	3	<1
Boron	ppm	ASTM D5185m	250	420	403	301
Barium	ppm	ASTM D5185m	10	3	2	5
Molybdenum	ppm	ASTM D5185m	100	106	80	79
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	450	553	405	524
Calcium	ppm	ASTM D5185m	3000	1695	1273	1492
Phosphorus	ppm	ASTM D5185m	1150	1295	961	1059
Zinc	ppm	ASTM D5185m	1350	1518	1121	1263
Sulfur	ppm	ASTM D5185m	4250	4355	3248	3773
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.4	15.7	21.4
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	6.7	7.4	6.0
Visc @ 100°C	cSt	ASTM D445	14.4	12.3	12.7	12.4

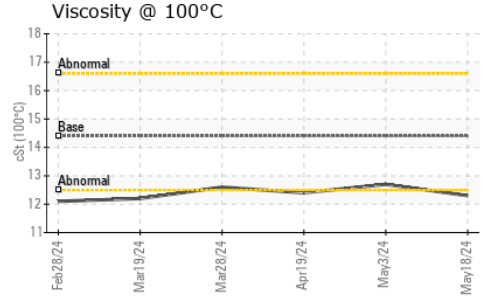
FT-IR (Direct Trend)



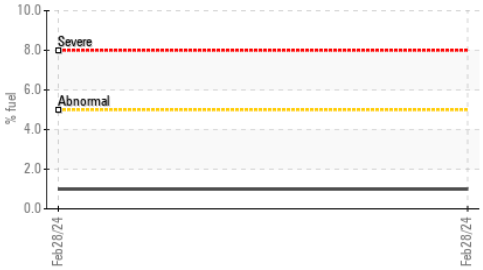
Base Number



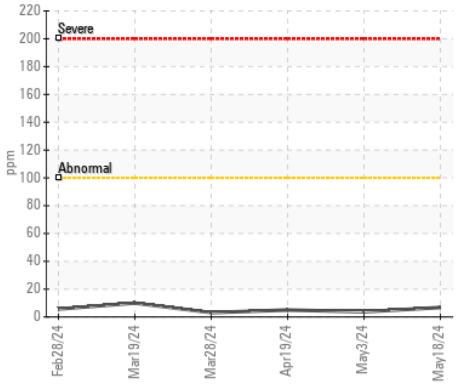
Viscosity @ 100°C



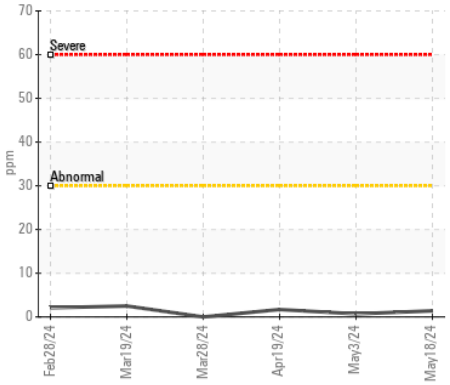
Fuel Dilution



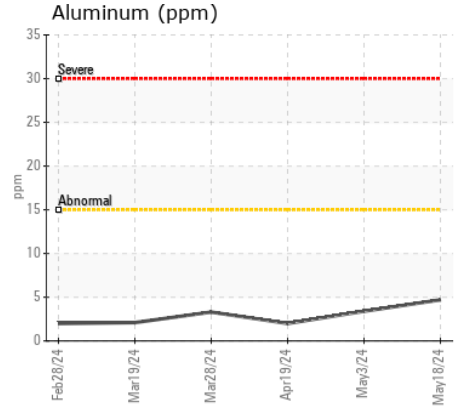
Iron (ppm)



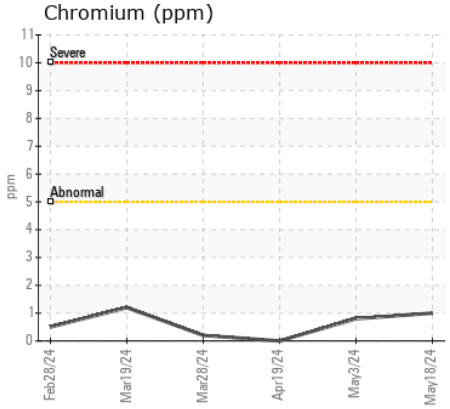
Lead (ppm)



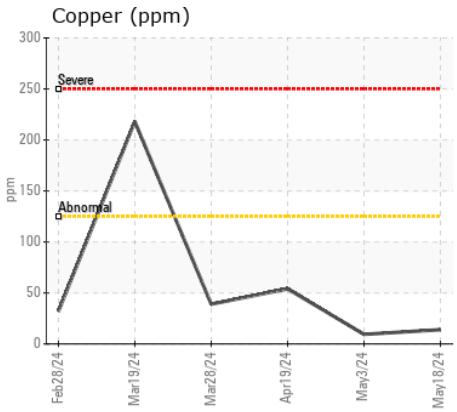
Aluminum (ppm)



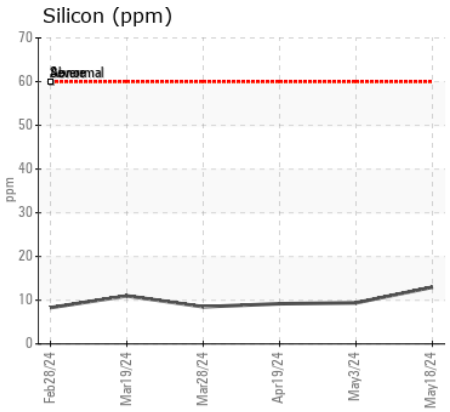
Chromium (ppm)



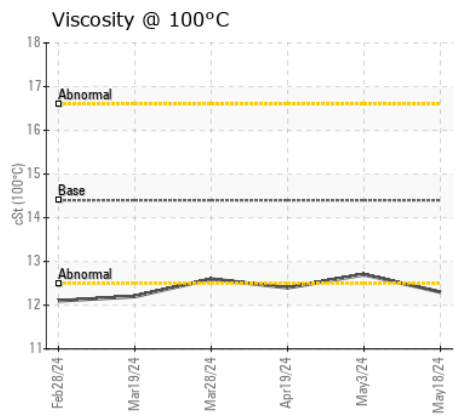
Copper (ppm)



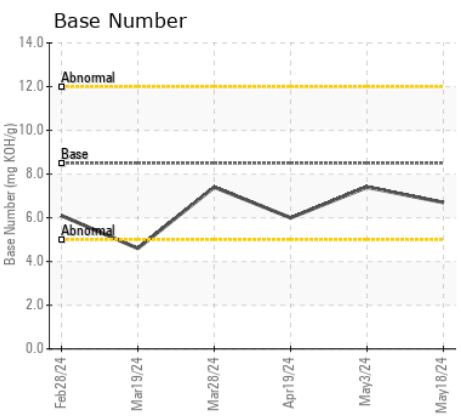
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LH0282872 **Received** : 28 May 2024
Lab Number : 06192003 **Tested** : 30 May 2024
Unique Number : 11048755 **Diagnosed** : 30 May 2024 - Jonathan Hester
Test Package : MOBCE (Additional Tests: FuelDilution, TBN)

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)

KINDER MORGAN
4301 IVERSON
TRINITY, AL
US 35601
Contact: RICKY JOHNSON
ricky_johnson@kindermorgan.com
T:
F: (256)355-5250