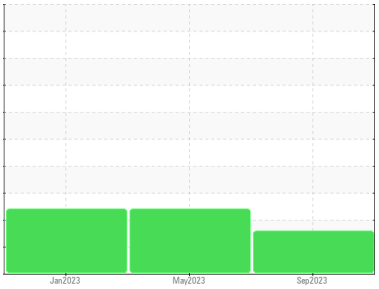
OIL ANALYSIS REPORT

OIL DIAGNOSTICS

Sample Rating Trend



DEGRADATION

Area
CHICAGO 95TH
Machine Id
LIEBHERR L546P L-146 (S/N 061803-1755)
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation
The oil is near the end of it`s useful service life, recommend schedule an oil change. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
Fuel content negligible. There is no indication of any contamination in the oil.

Fluid Condition
The oil viscosity is lower than normal. The BN level is low. Confirm oil type.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PCA0105654**	PCA0097251	PCA0080649
Sample Date		Client Info		**28 Sep 2023**	31 May 2023	24 Jan 2023
Machine Age	hrs	Client Info		**55147**	0	4125
Oil Age	hrs	Client Info		**250**	4123	0
Oil Changed		Client Info		**N/A**	N/A	Changed
Sample Status				**ABNORMAL**	SEVERE	SEVERE

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**61**	28	50
Chromium	ppm	ASTM D5185m	>5	**2**	<1	1
Nickel	ppm	ASTM D5185m	>5	**<1**	<1	1
Titanium	ppm	ASTM D5185m		**<1**	<1	0
Silver	ppm	ASTM D5185m	>3	**0**	0	0
Aluminum	ppm	ASTM D5185m	>15	**4**	2	2
Lead	ppm	ASTM D5185m	>30	**6**	1	1
Copper	ppm	ASTM D5185m	>125	**2**	2	3
Tin	ppm	ASTM D5185m	>5	**1**	<1	<1
Vanadium	ppm	ASTM D5185m		**<1**	<1	0
Cadmium	ppm	ASTM D5185m		**0**	<1	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	**14**	<1	3
Barium	ppm	ASTM D5185m	10	**0**	0	0
Molybdenum	ppm	ASTM D5185m	100	**66**	38	45
Manganese	ppm	ASTM D5185m		**1**	<1	1
Magnesium	ppm	ASTM D5185m	450	**474**	640	757
Calcium	ppm	ASTM D5185m	3000	**901**	1013	919
Phosphorus	ppm	ASTM D5185m	1150	**536**	754	776
Zinc	ppm	ASTM D5185m	1350	**656**	962	1003
Sulfur	ppm	ASTM D5185m	4250	**2110**	2596	2357

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>60	**14**	3	4
Sodium	ppm	ASTM D5185m	>158	**3**	3	3
Potassium	ppm	ASTM D5185m	>20	**<1**	2	2
Fuel	%	ASTM D3524	>5	**0.2**	13.2	16.4

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0**	0.7	0.9
Nitration	Abs/cm	*ASTM D7624	>20	**8.9**	11.8	13.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**21.3**	25.1	26.2

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**10.9**	26.0	27.7
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**3.0**	4.5	5.1

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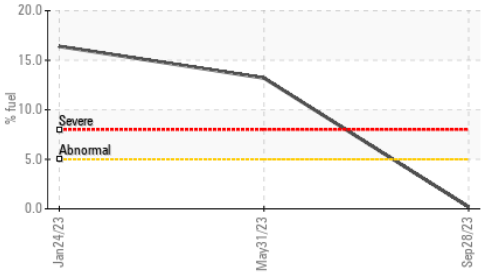
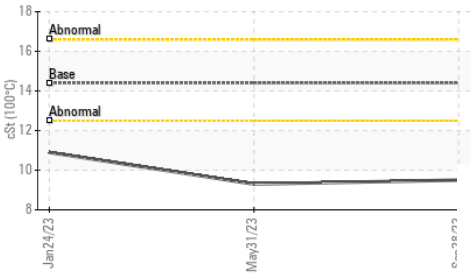
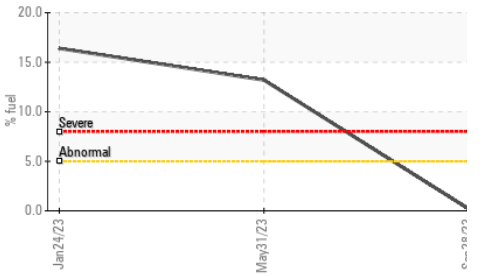
Fuel Dilution



▲ Viscosity @ 100°C



Fuel Dilution

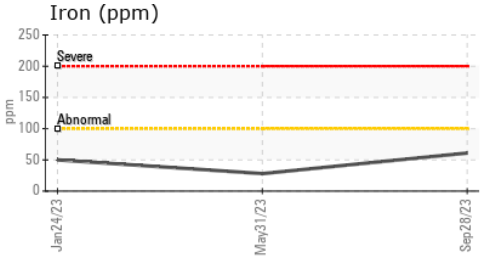


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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
Free Water	scalar	*Visual		**NEG**	NEG	NEG

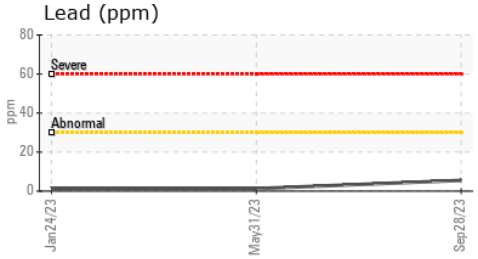
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	▲ **9.5**	▲ 9.3	▲ 10.9

GRAPHS

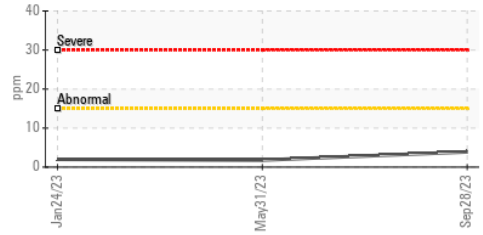
Iron (ppm)



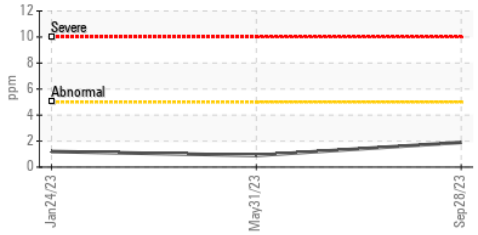
Lead (ppm)



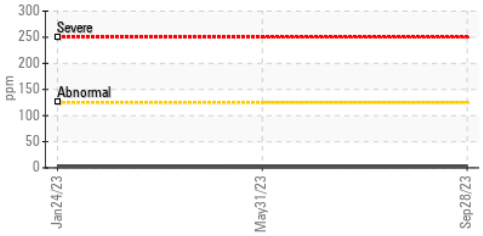
Aluminum (ppm)



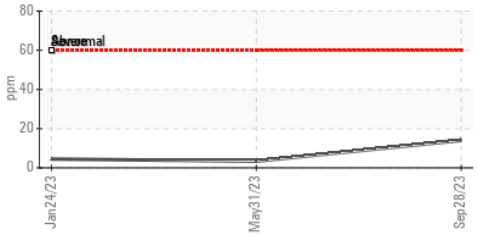
Chromium (ppm)



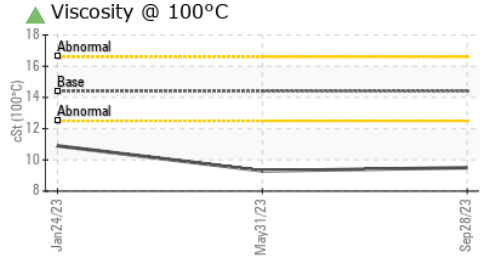
Copper (ppm)



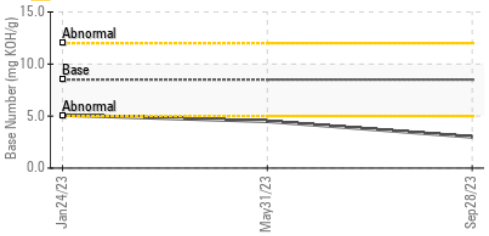
Silicon (ppm)



▲ Viscosity @ 100°C



▲ Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0105654
Lab Number : 06076511
Unique Number : 10858602
Test Package : MOB 1 (Additional Tests: PercentFuel, TBN)

Received : 01 Feb 2024
Tested : 07 Feb 2024
Diagnosed : 07 Feb 2024 - Jonathan Hester

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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