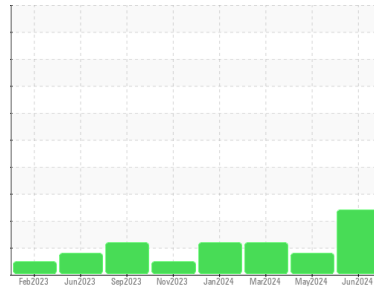


OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Machine Id
LIEBHERR L546 L-148 (S/N 1755-62277)
 Component
Diesel Engine
 Fluid
PETRO CANADA DURON HP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0123865	PCA0123834	PCA0120412
Sample Date	Client Info	29 Jun 2024	04 May 2024	15 Mar 2024
Machine Age	hrs	6333	6047	5747
Oil Age	hrs	0	250	500
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		SEVERE	ABNORMAL	ABNORMAL

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	10	10	8
Chromium	ppm ASTM D5185m >20	<1	<1	<1
Nickel	ppm ASTM D5185m >4	0	<1	<1
Titanium	ppm ASTM D5185m	<1	<1	<1
Silver	ppm ASTM D5185m >3	<1	0	0
Aluminum	ppm ASTM D5185m >20	<1	2	2
Lead	ppm ASTM D5185m >40	0	0	0
Copper	ppm ASTM D5185m >330	1	1	<1
Tin	ppm ASTM D5185m >15	0	<1	<1
Vanadium	ppm ASTM D5185m	<1	0	0
Cadmium	ppm ASTM D5185m	0	<1	<1

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m	6	4	4
Barium	ppm ASTM D5185m	0	0	0
Molybdenum	ppm ASTM D5185m	51	52	54
Manganese	ppm ASTM D5185m	<1	<1	<1
Magnesium	ppm ASTM D5185m	843	839	863
Calcium	ppm ASTM D5185m	1104	1060	1111
Phosphorus	ppm ASTM D5185m	899	905	916
Zinc	ppm ASTM D5185m	1067	1149	1177
Sulfur	ppm ASTM D5185m	2870	3079	3076

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	1	3	3
Sodium	ppm ASTM D5185m	6	<1	1
Potassium	ppm ASTM D5185m >20	0	3	2
Fuel	% ASTM D3524 >5	▲ 8.2	▲ 6.8	▲ 5.7

INFRA-RED

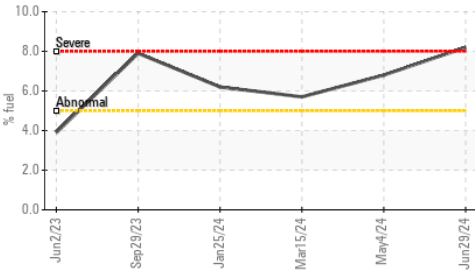
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.3	0.2	0.2
Nitration	Abs/cm *ASTM D7624 >20	8.8	8.1	7.6
Sulfation	Abs/.1mm *ASTM D7415 >30	19.7	18.7	18.6

FLUID DEGRADATION

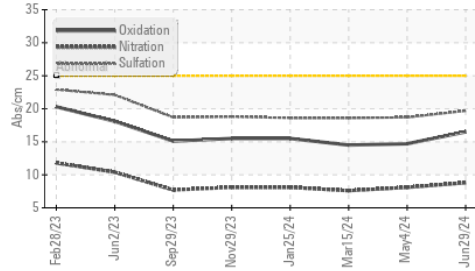
method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	16.5	14.7	14.5
Base Number (BN)	mg KOH/g ASTM D2896 9.8	7.9	8.5	8.6

OIL ANALYSIS REPORT

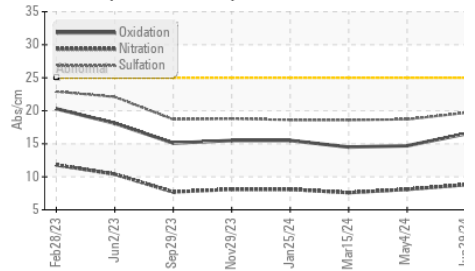
Fuel Dilution



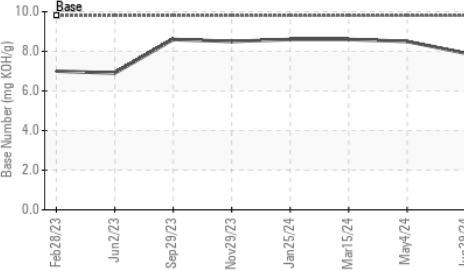
FT-IR (Direct Trend)



FT-IR (Direct Trend)



Base Number

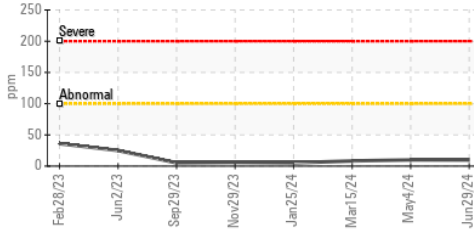


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

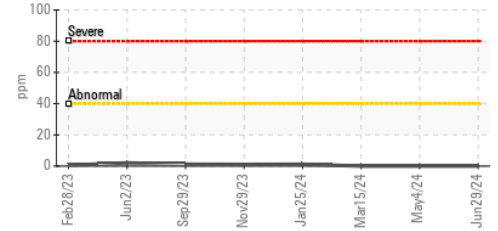
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.6	▲ 11.9	12.4

GRAPHS

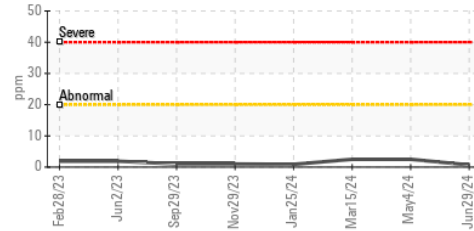
Iron (ppm)



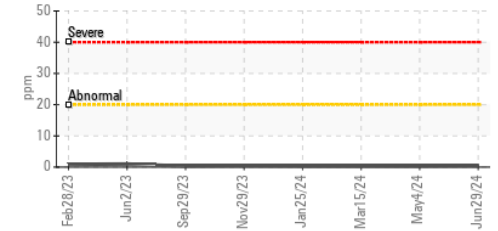
Lead (ppm)



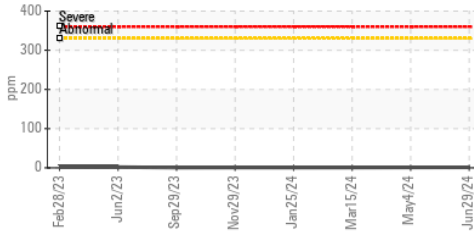
Aluminum (ppm)



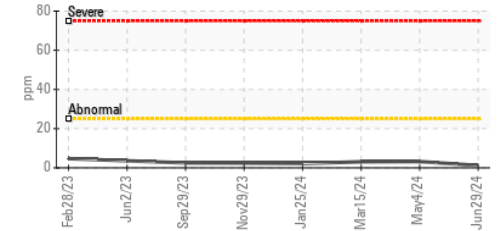
Chromium (ppm)



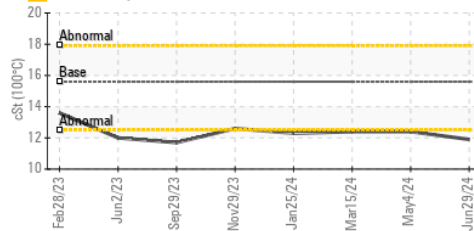
Copper (ppm)



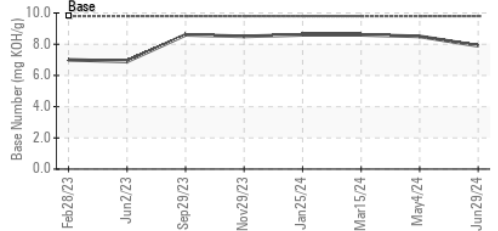
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : PCA0123865

Lab Number : 06228374

Unique Number : 11111867

Test Package : MOB 1 (Additional Tests: PercentFuel, 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)

Received : 05 Jul 2024

Tested : 09 Jul 2024

Diagnosed : 09 Jul 2024 - Wes Davis

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CHICAGO, IL

US 60617

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T:

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