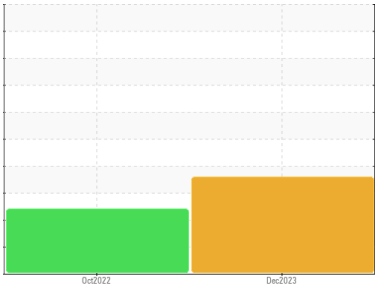
OIL ANALYSIS REPORT

Sample Rating Trend



FUEL

Area
East Chicago Operations
Machine Id
LIEBHERR MH-12 (S/N LHZ0744ZZK014140)
Component
Diesel Engine
Fluid
PETRO CANADA 15W40 (6 GAL)

DIAGNOSIS

Recommendation

Please note that all wear metal and contaminant levels are being considered accumulative. We advise that you check for the source of the coolant leak. Check for low coolant level. 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. (Customer Sample Comment: fluid drained not changed , filter not changed. both at 141 hours)

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high. There is a high amount of fuel present in the oil.

Fluid Condition

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

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PCA0113750**	PCA0082584	---
Sample Date		Client Info		**11 Dec 2023**	11 Oct 2022	---
Machine Age	hrs	Client Info		**51147**	50	---
Oil Age	hrs	Client Info		**141**	50	---
Oil Changed		Client Info		**Changed**	Changed	---
Sample Status				**SEVERE**	SEVERE	---

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**9**	4	---
Chromium	ppm	ASTM D5185m	>5	**0**	<1	---
Nickel	ppm	ASTM D5185m	>5	**0**	3	---
Titanium	ppm	ASTM D5185m		**0**	0	---
Silver	ppm	ASTM D5185m	>3	**0**	0	---
Aluminum	ppm	ASTM D5185m	>15	**1**	2	---
Lead	ppm	ASTM D5185m	>30	**<1**	<1	---
Copper	ppm	ASTM D5185m	>125	**5**	<1	---
Tin	ppm	ASTM D5185m	>5	**0**	<1	---
Vanadium	ppm	ASTM D5185m		**0**	<1	---
Cadmium	ppm	ASTM D5185m		**0**	0	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**12**	14	---
Barium	ppm	ASTM D5185m		**0**	2	---
Molybdenum	ppm	ASTM D5185m		**48**	48	---
Manganese	ppm	ASTM D5185m		**0**	<1	---
Magnesium	ppm	ASTM D5185m		**581**	713	---
Calcium	ppm	ASTM D5185m		**673**	928	---
Phosphorus	ppm	ASTM D5185m		**630**	825	---
Zinc	ppm	ASTM D5185m		**778**	999	---
Sulfur	ppm	ASTM D5185m		**2083**	3076	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>60	**8**	5	---
Sodium	ppm	ASTM D5185m		▲ **284**	87	---
Potassium	ppm	ASTM D5185m	>20	**7**	7	---
Fuel	%	ASTM D3524	>5	● **45.1**	● 16.6	---
Glycol	%	*ASTM D2982		**NEG**	NEG	---

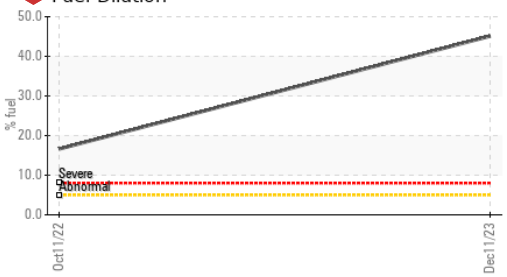
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.2**	0.1	---
Nitration	Abs/cm	*ASTM D7624	>20	**11.4**	6.8	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	**17.7**	18.7	---

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.4**	13.8	---
Base Number (BN)	mg KOH/g	ASTM D2896		**5.68**	7.01	---

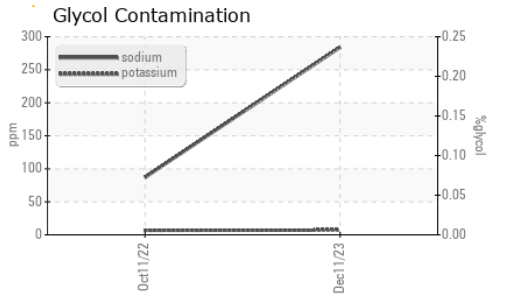
OIL ANALYSIS REPORT

OIL DIAGNOSTICS

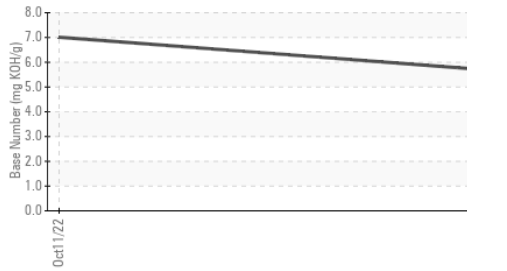
Fuel Dilution



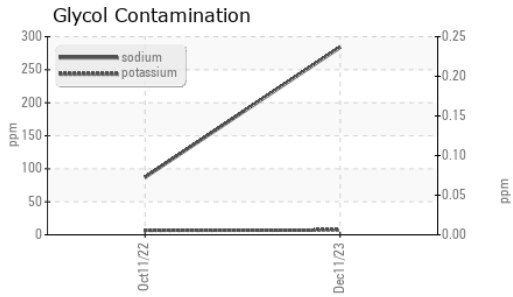
Glycol Contamination



Base Number



Glycol Contamination

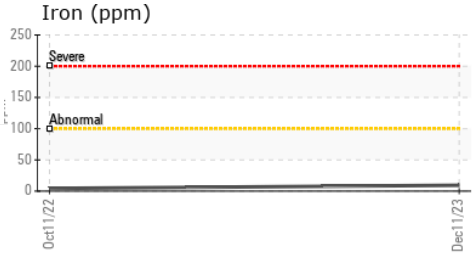


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	---
Silt	scalar	*Visual	NONE	**NONE**	NONE	---
Debris	scalar	*Visual	NONE	**NONE**	NONE	---
Sand/Dirt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

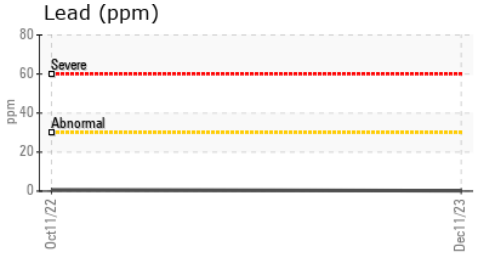
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		▲ **5.5**	▲ 9	---

GRAPHS

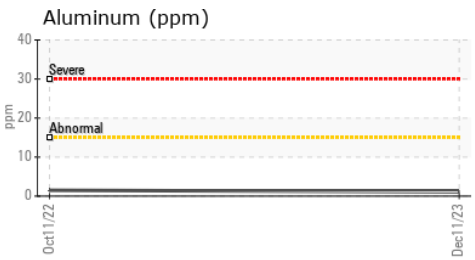
Iron (ppm)



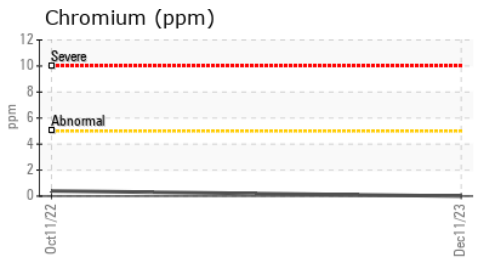
Lead (ppm)



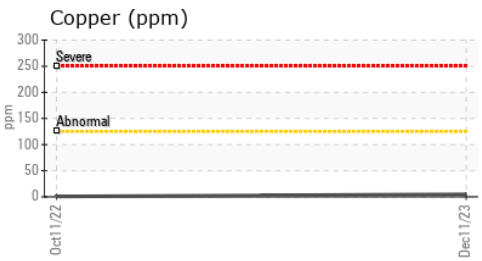
Aluminum (ppm)



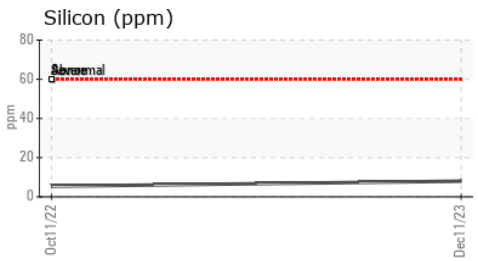
Chromium (ppm)



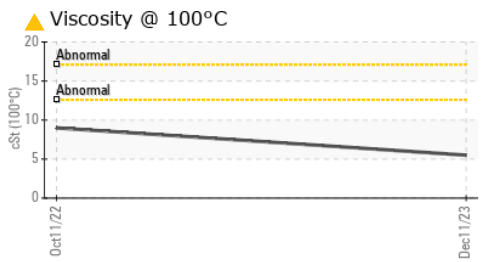
Copper (ppm)



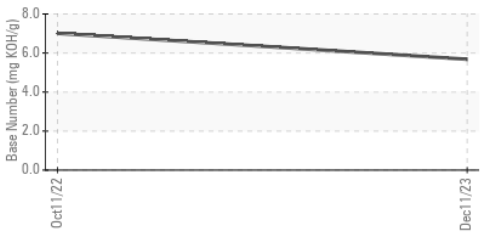
Silicon (ppm)



▲ Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0113750 **Recieved** : 13 Dec 2023
Lab Number : 06034165 **Diagnosed** : 20 Dec 2023
Unique Number : 10789394 **Diagnostician** : Jonathan Hester
Test Package : MOB 2 (Additional Tests: Glycol, PercentFuel)

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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Report Id: SCREAS [WUSCAR] 06034165 (Generated: 12/20/2023 19:31:45) Rev: 1

Submitted By: DAN GERTLER