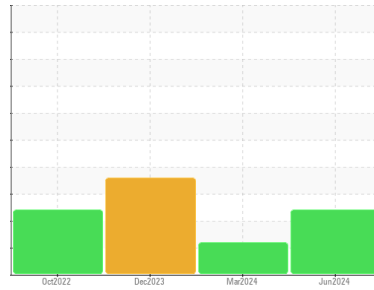




OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL



Area

East Chicago Operations

LIEBHERR MH-12 (S/N LHZ0744ZZK014140)

Machine Id

Component
Diesel Engine

Fluid

PETRO CANADA 15W40 (6 GAL)

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. (Customer Sample Comment: 500 hr pm service)

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0113778	PCA0113801	PCA0113750
Sample Date	Client Info	19 Jun 2024	14 Mar 2024	11 Dec 2023
Machine Age	hrs	52486	51829	51147
Oil Age	hrs	0	682	141
Oil Changed	Client Info	Changed	N/A	Changed
Sample Status		ABNORMAL	ABNORMAL	SEVERE

CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >5	<1.0	0.8	▲ 45.1
Water	WC Method >0.2	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >100	20	25	9
Chromium	ppm ASTM D5185m >5	<1	<1	0
Nickel	ppm ASTM D5185m >5	<1	<1	0
Titanium	ppm ASTM D5185m	0	0	0
Silver	ppm ASTM D5185m >3	0	0	0
Aluminum	ppm ASTM D5185m >15	4	4	1
Lead	ppm ASTM D5185m >30	2	2	<1
Copper	ppm ASTM D5185m >125	6	3	5
Tin	ppm ASTM D5185m >5	0	1	0
Vanadium	ppm ASTM D5185m	<1	0	0
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m	17	18	12
Barium	ppm ASTM D5185m	<1	0	0
Molybdenum	ppm ASTM D5185m	85	72	48
Manganese	ppm ASTM D5185m	<1	<1	0
Magnesium	ppm ASTM D5185m	968	940	581
Calcium	ppm ASTM D5185m	1209	1092	673
Phosphorus	ppm ASTM D5185m	1039	1020	630
Zinc	ppm ASTM D5185m	1329	1263	778
Sulfur	ppm ASTM D5185m	3602	3467	2083

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >60	14	9	8
Sodium	ppm ASTM D5185m	▲ 747	▲ 306	▲ 284
Potassium	ppm ASTM D5185m >20	▲ 56	8	7
Glycol	% *ASTM D2982	NEG	NEG	NEG

INFRA-RED

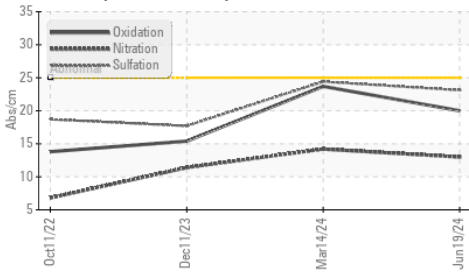
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.6	0.6	0.2
Nitration	Abs/cm *ASTM D7624 >20	13.0	14.2	11.4
Sulfation	Abs/.1mm *ASTM D7415 >30	23.1	24.4	17.7

FLUID DEGRADATION

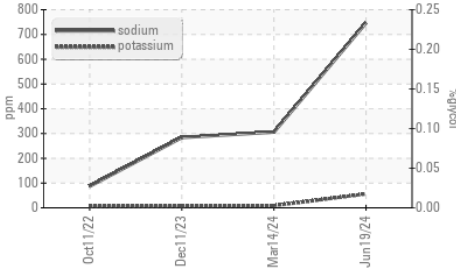
method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	20.0	23.7	15.4
Base Number (BN)	mg KOH/g ASTM D2896	9.53	8.76	5.68

OIL ANALYSIS REPORT

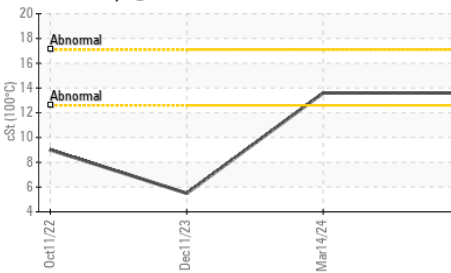
FT-IR (Direct Trend)



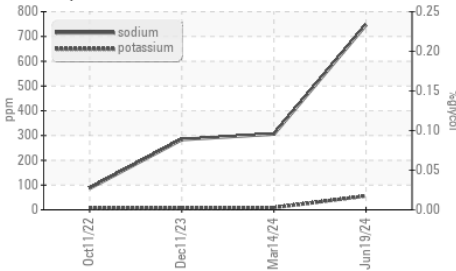
Glycol Contamination



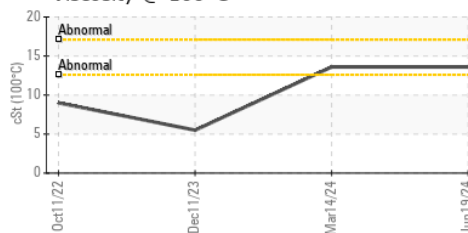
Viscosity @ 100°C



Glycol Contamination



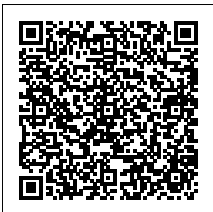
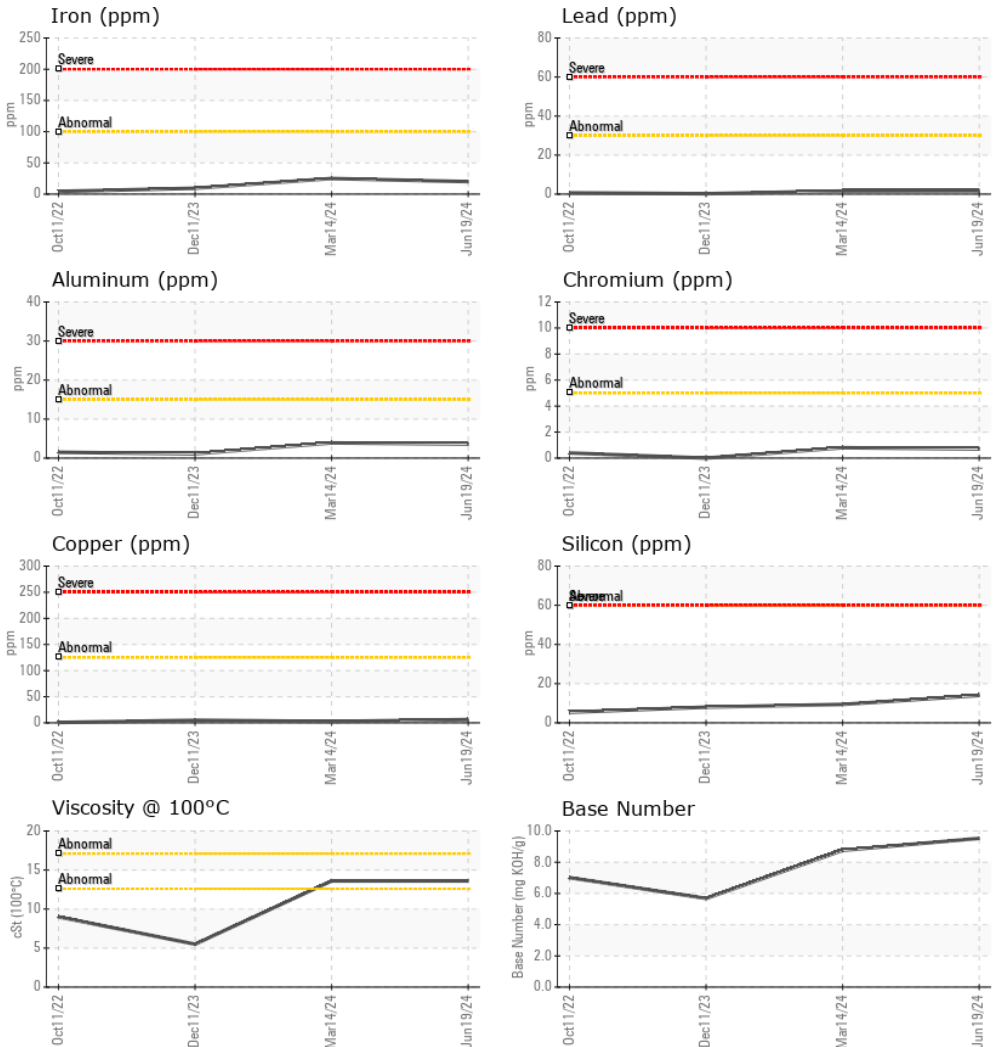
Viscosity @ 100°C



PARAMETER	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

PARAMETER	method	limit/base	current	history1	history2
FLUID PROPERTIES					
Visc @ 100°C	cSt	ASTM D445	13.6	13.6	▲ 5.5

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0113778 **Received** : 05 Jul 2024
Lab Number : 06228856 **Tested** : 09 Jul 2024
Unique Number : 11112349 **Diagnosed** : 09 Jul 2024 - Jonathan Hester
Test Package : MOB 2 (Additional Tests: Glycol)

SCRAP METAL SERVICES
 415 E 151ST STREET
 EAST CHICAGO, IN
 US 46312
 Contact: DAN GERTLER
 dgertler@scrapmetalservices.com
 T: (312)771-4999
 F:

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)