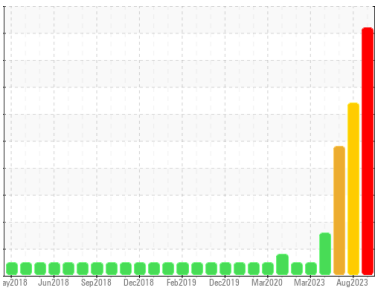
OIL DIAGNOSTICS

OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL

Area
Plymouth & Brockton
Machine Id
415
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (39 QTS)

DIAGNOSIS

Recommendation
We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Wear
Cylinder, crank, or cam shaft wear is indicated.

Contamination
Sodium and/or potassium levels are high. There is a high concentration of glycol 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		**PCA0104399**	PCA0013379	PCA0013295
Sample Date		Client Info		**11 Dec 2023**	09 Aug 2023	23 Jun 2023
Machine Age	mls	Client Info		**540389**	528857	523184
Oil Age	mls	Client Info		**12000**	24000	12000
Oil Changed		Client Info		**Not Changd**	Changed	Not Changd
Sample Status				**SEVERE**	ABNORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	**<1.0**	<1.0	<1.0
Water		WC Method	>0.2	**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	▲ **125**	▲ 157	▲ 111
Chromium	ppm	ASTM D5185m	>20	**1**	4	3
Nickel	ppm	ASTM D5185m	>2	**0**	<1	<1
Titanium	ppm	ASTM D5185m	>2	**0**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**4**	8	7
Lead	ppm	ASTM D5185m	>40	**34**	▲ 64	▲ 54
Copper	ppm	ASTM D5185m	>330	**35**	192	▲ 169
Tin	ppm	ASTM D5185m	>15	**0**	3	2
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**5**	8	8
Barium	ppm	ASTM D5185m	0	**5**	0	0
Molybdenum	ppm	ASTM D5185m	60	**131**	72	68
Manganese	ppm	ASTM D5185m	0	**0**	2	1
Magnesium	ppm	ASTM D5185m	1010	**867**	935	967
Calcium	ppm	ASTM D5185m	1070	**1109**	1207	1261
Phosphorus	ppm	ASTM D5185m	1150	**918**	1062	1050
Zinc	ppm	ASTM D5185m	1270	**1218**	1280	1335
Sulfur	ppm	ASTM D5185m	2060	**3626**	2482	2882

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**16**	14	12
Sodium	ppm	ASTM D5185m		▲ **1741**	▲ 328	▲ 169
Potassium	ppm	ASTM D5185m	>20	▲ **1209**	▲ 86	▲ 41
Glycol	%	*ASTM D2982		⬢ **0.20**	▲ 0.06	NEG

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>6	**2.2**	4.2	3.1
Nitration	Abs/cm	*ASTM D7624	>20	**15.9**	21.4	17.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	**27.7**	37.1	31.4

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**21.0**	34.9	28.4
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**11.29**	6.61	7.17

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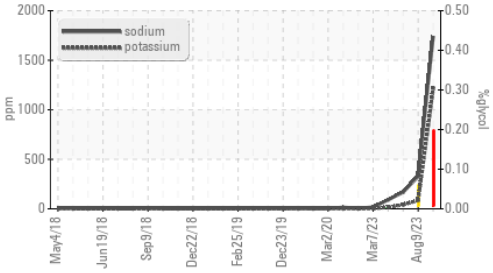
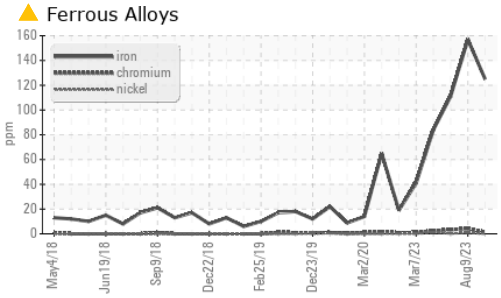
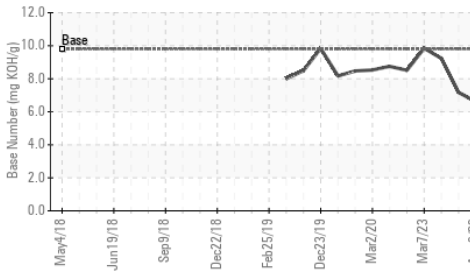
Glycol Contamination



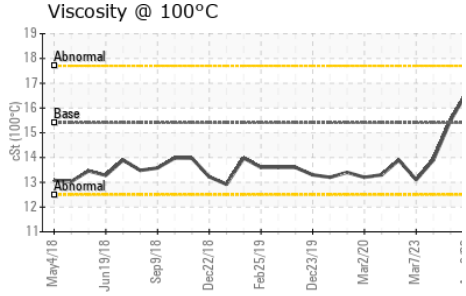
Ferrous Alloys



Base Number



Viscosity @ 100°C

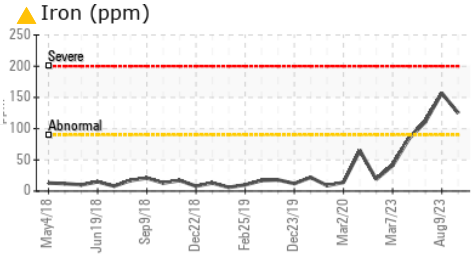


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

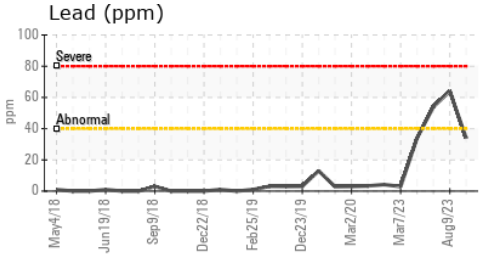
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**14.4**	16.7	15.5

GRAPHS

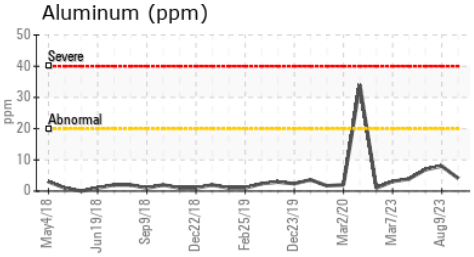
Iron (ppm)



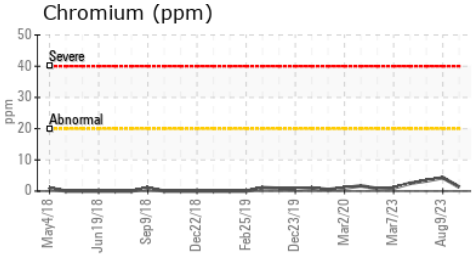
Lead (ppm)



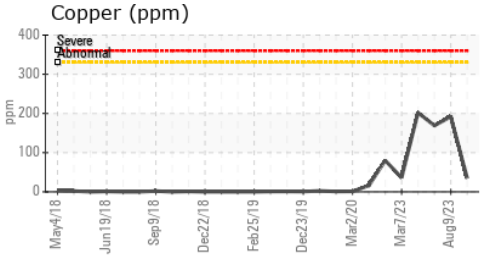
Aluminum (ppm)



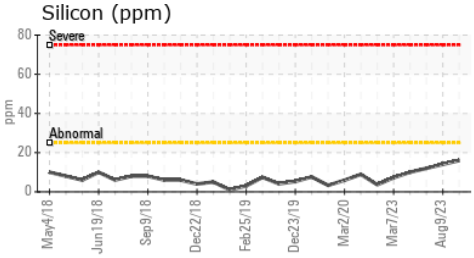
Chromium (ppm)



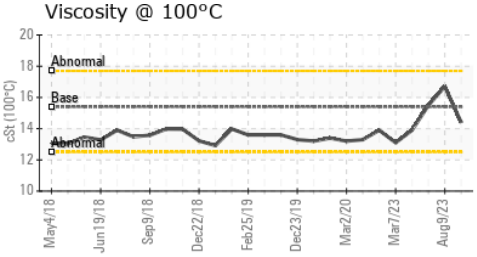
Copper (ppm)



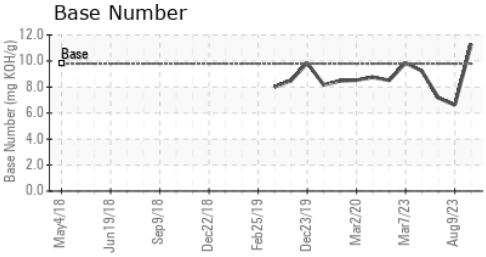
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0104399 **Recieved** : 02 Jan 2024
Lab Number : 06049122 **Diagnosed** : 03 Jan 2024
Unique Number : 10809730 **Diagnostician** : Jonathan Hester
Test Package : MOB 2

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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