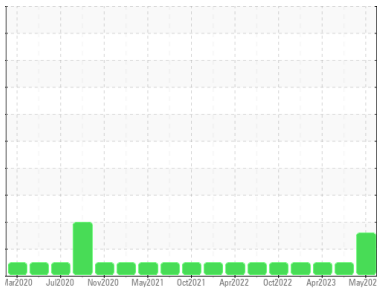
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
DR169
Component
Diesel Engine
Fluid
PETRO CANADA DURON UHP 5W40 (36 LTR)

DIAGNOSIS

Recommendation
The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear
Copper ppm levels are abnormal. Lead ppm levels are noted. A sharp increase in the copper level is noted. Bearing wear is indicated.

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

Fluid Condition
The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC0081609**	PC0062400	PC0048353
Sample Date		Client Info		**29 May 2024**	16 Aug 2023	18 Apr 2023
Machine Age	hrs	Client Info		**14108**	13758	13548
Oil Age	hrs	Client Info		**0**	250	250
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
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 D5185(m)	>100	**20**	4	4
Chromium	ppm	ASTM D5185(m)	>20	**<1**	<1	0
Nickel	ppm	ASTM D5185(m)	>4	**0**	0	<1
Titanium	ppm	ASTM D5185(m)		**<1**	<1	<1
Silver	ppm	ASTM D5185(m)	>3	**0**	0	0
Aluminum	ppm	ASTM D5185(m)	>20	**1**	<1	1
Lead	ppm	ASTM D5185(m)	>40	**12**	0	<1
Copper	ppm	ASTM D5185(m)	>330	**275**	1	<1
Tin	ppm	ASTM D5185(m)	>15	**2**	0	<1
Antimony	ppm	ASTM D5185(m)		**0**	0	0
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	65	**42**	48	48
Barium	ppm	ASTM D5185(m)	0	**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)	65	**55**	54	58
Manganese	ppm	ASTM D5185(m)	0	**2**	0	<1
Magnesium	ppm	ASTM D5185(m)	1160	**1037**	1079	1084
Calcium	ppm	ASTM D5185(m)	820	**823**	812	865
Phosphorus	ppm	ASTM D5185(m)	1160	**930**	1017	1064
Zinc	ppm	ASTM D5185(m)	1260	**1085**	1149	1143
Sulfur	ppm	ASTM D5185(m)	3000	**2543**	2741	2841
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**20**	3	3
Sodium	ppm	ASTM D5185(m)		**10**	4	4
Potassium	ppm	ASTM D5185(m)	>20	**2**	<1	<1

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0**	0	0
Nitration	Abs/cm	ASTM D7624*	>20	**8.6**	7.9	7.8
Sulfation	Abs/.1mm	ASTM D7415*	>30	**20.5**	20.9	20.0

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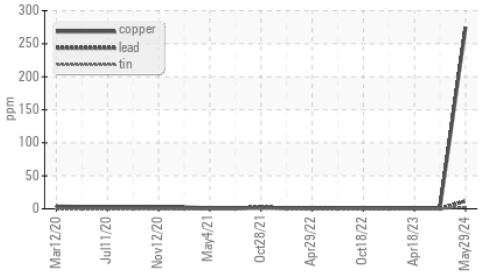
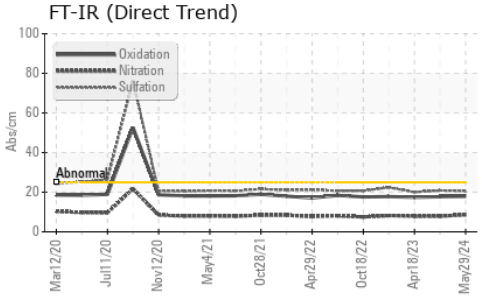
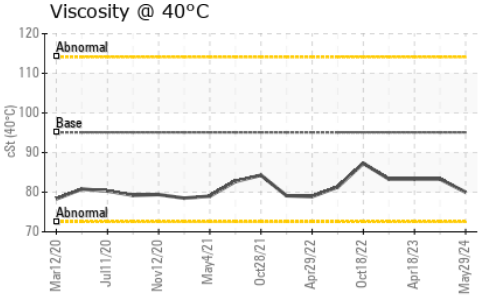
Non-ferrous Metals



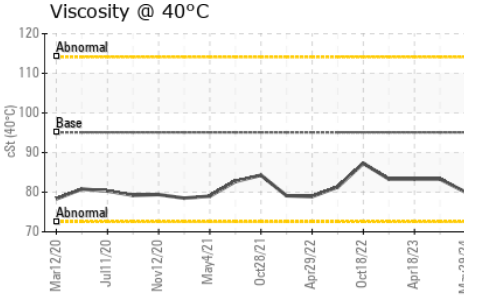
FT-IR (Direct Trend)



Viscosity @ 40°C



Viscosity @ 40°C



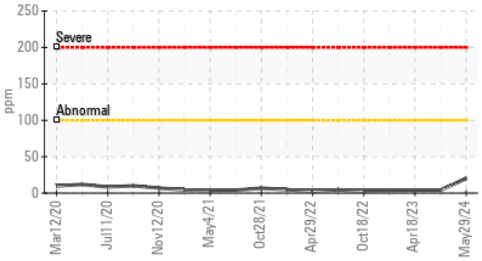
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**17.9**	17.7	17.4

VISUAL		method	limit/base	current	history1	history2
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

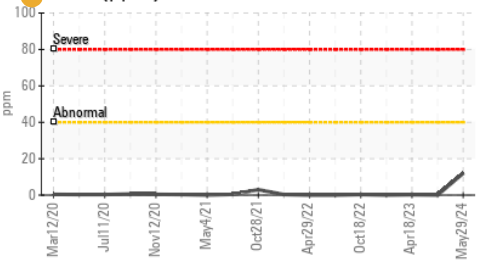
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	95.1	**80.0**	83.3	83.3
Visc @ 100°C	cSt	ASTM D7279(m)	14.3	**13.2**	13.8	13.6
Viscosity Index (VI)	Scale	ASTM D2270*	169	**167**	170	166

GRAPHS

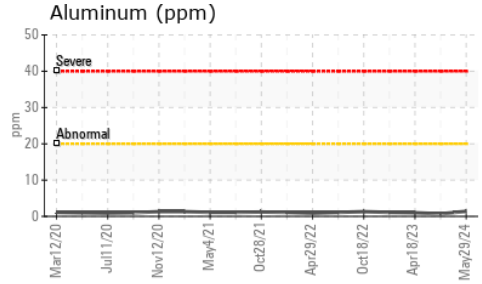
Iron (ppm)



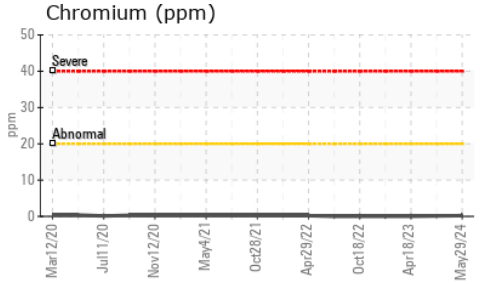
Lead (ppm)



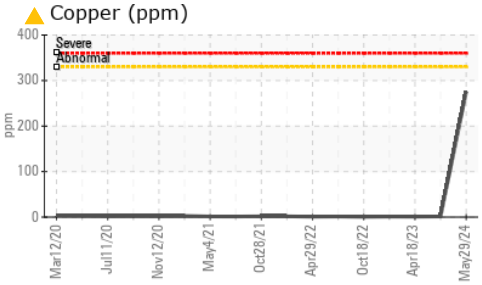
Aluminum (ppm)



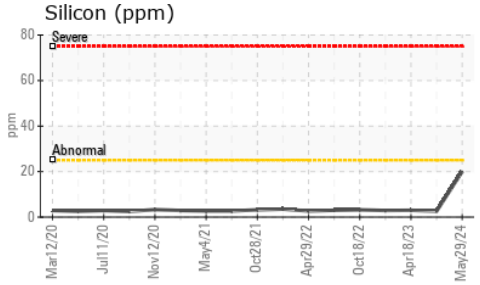
Chromium (ppm)



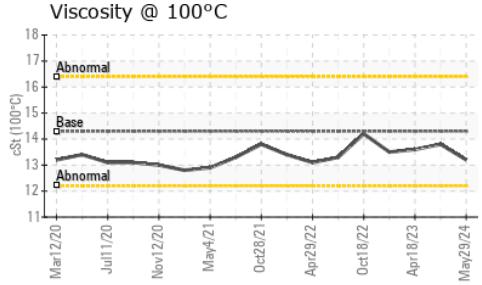
Copper (ppm)



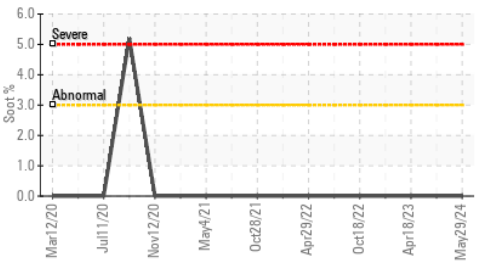
Silicon (ppm)



Viscosity @ 100°C



Soot %



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0081609
Lab Number : 02640707
Unique Number : 5789869
Test Package : MOB 1 (Additional Tests: KV40, VI)

Received : 10 Jun 2024
Tested : 10 Jun 2024
Diagnosed : 10 Jun 2024 - Kevin Marson

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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