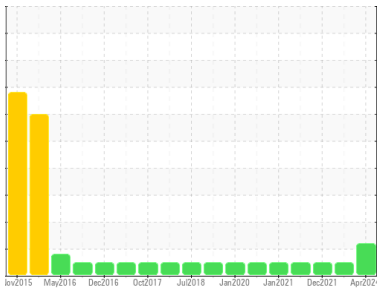
OIL ANALYSIS REPORT

OIL DIAGNOSTICS

Area
On-Road
Machine Id
285
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



VISUAL METAL

DIAGNOSIS

Recommendation
We suspect abnormal metal contamination may be due to sampling method. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of metal. We advise an early resample to confirm this situation.

Wear
Moderate concentration of visible metal present. All component wear rates are normal.

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

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		**PCA0109907**	PCA0072114	PCA0059457
Sample Date		Client Info		**01 Apr 2024**	22 Jun 2022	28 Dec 2021
Machine Age	mls	Client Info		**336000**	336000	316000
Oil Age	mls	Client Info		**295453**	315453	20547
Oil Changed		Client Info		**N/A**	N/A	N/A
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 D5185m	>100	**9**	17	22
Chromium	ppm	ASTM D5185m	>20	**0**	1	1
Nickel	ppm	ASTM D5185m	>4	**0**	0	0
Titanium	ppm	ASTM D5185m		**<1**	<1	<1
Silver	ppm	ASTM D5185m	>3	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>20	**16**	4	5
Lead	ppm	ASTM D5185m	>40	**0**	0	<1
Copper	ppm	ASTM D5185m	>330	**20**	4	4
Tin	ppm	ASTM D5185m	>15	**8**	<1	<1
Antimony	ppm	ASTM D5185m		**---**	---	<1
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	**15**	4	5
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	60	**60**	60	58
Manganese	ppm	ASTM D5185m	0	**0**	<1	<1
Magnesium	ppm	ASTM D5185m	1010	**972**	875	916
Calcium	ppm	ASTM D5185m	1070	**1263**	1072	1103
Phosphorus	ppm	ASTM D5185m	1150	**1105**	907	923
Zinc	ppm	ASTM D5185m	1270	**1301**	1165	1152
Sulfur	ppm	ASTM D5185m	2060	**4085**	2414	2287

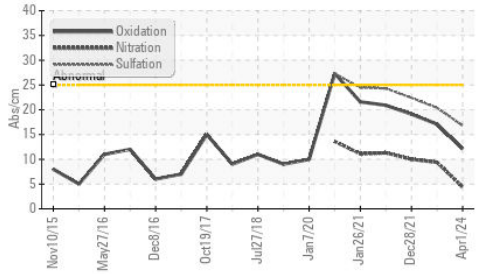
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**5**	5	5
Sodium	ppm	ASTM D5185m		**15**	5	2
Potassium	ppm	ASTM D5185m	>20	**24**	0	5

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.1**	0.6	0.9
Nitration	Abs/cm	*ASTM D7624	>20	**4.4**	9.4	10
Sulfation	Abs/.1mm	*ASTM D7415	>30	**16.8**	20.4	22.4

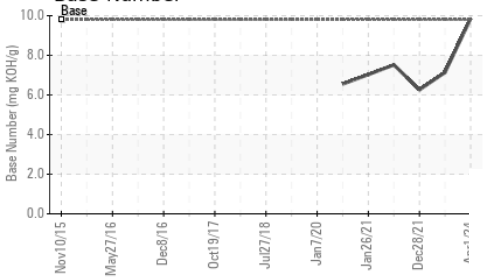
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**12.1**	17.1	19.1
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**9.85**	7.14	6.26

OIL ANALYSIS REPORT

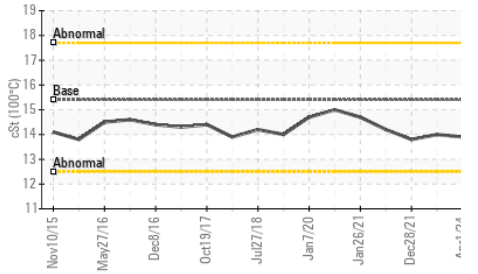
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

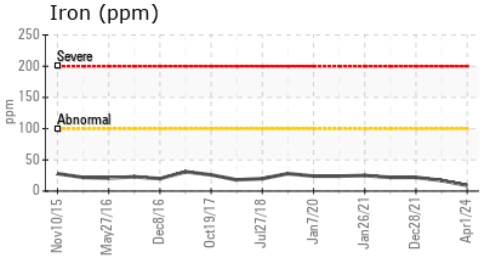


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	▲ **MODER**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

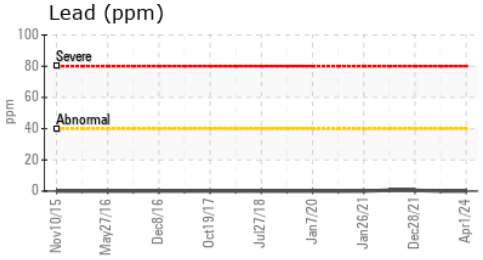
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**13.9**	14.0	13.8

GRAPHS

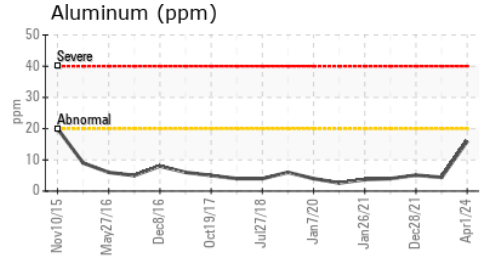
Iron (ppm)



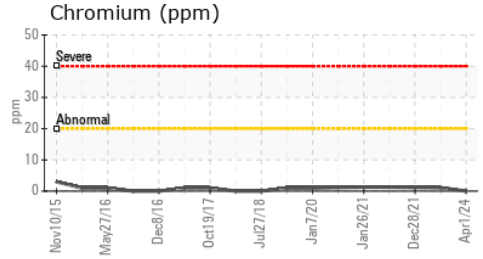
Lead (ppm)



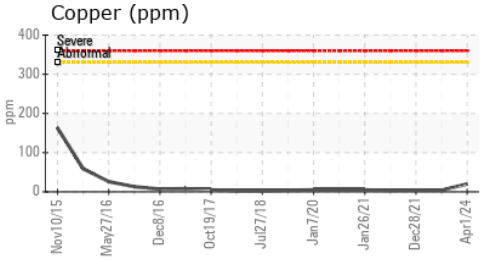
Aluminum (ppm)



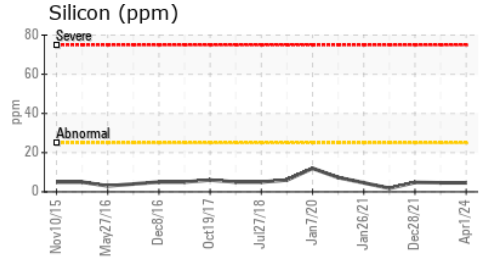
Chromium (ppm)



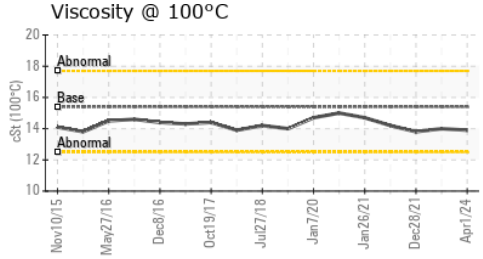
Copper (ppm)



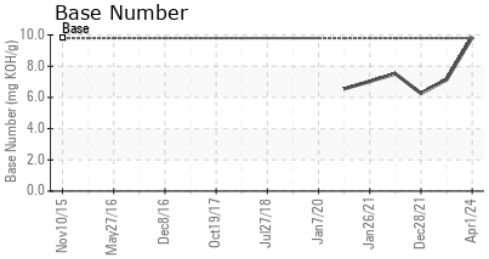
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0109907
Lab Number : 06137622
Unique Number : 10957087
Test Package : MOB 2

Received : 03 Apr 2024
Tested : 04 Apr 2024
Diagnosed : 05 Apr 2024 - Doug Bogart

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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