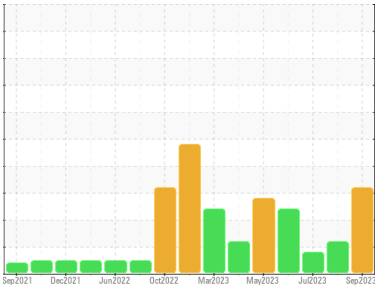
OIL ANALYSIS REPORT

OIL DIAGNOSTICS

Area
Off-Road
Machine Id
L209
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



FUEL

DIAGNOSIS

Recommendation
We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear
Aluminum ppm levels are abnormal. Piston wear is indicated.

Contamination
There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. 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		**PCA0090496**	PCA0098479	PCA0090489
Sample Date		Client Info		**20 Sep 2023**	07 Aug 2023	19 Jul 2023
Machine Age	hrs	Client Info		**6120**	5405	5405
Oil Age	hrs	Client Info		**6120**	5405	5405
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**SEVERE**	ABNORMAL	MARGINAL

CONTAMINATION	method	limit/base	current	history1	history2
Glycol	WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**19**	13	8
Chromium	ppm	ASTM D5185m	>20	**2**	2	<1
Nickel	ppm	ASTM D5185m	>2	**<1**	1	<1
Titanium	ppm	ASTM D5185m	>2	**0**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>25	▲ **26**	15	6
Lead	ppm	ASTM D5185m	>40	**0**	3	<1
Copper	ppm	ASTM D5185m	>330	**<1**	4	<1
Tin	ppm	ASTM D5185m	>15	**0**	1	<1
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**2**	0	3
Barium	ppm	ASTM D5185m	0	**0**	0	2
Molybdenum	ppm	ASTM D5185m	60	**54**	55	60
Manganese	ppm	ASTM D5185m	0	**0**	2	<1
Magnesium	ppm	ASTM D5185m	1010	**932**	805	904
Calcium	ppm	ASTM D5185m	1070	**1017**	881	1055
Phosphorus	ppm	ASTM D5185m	1150	**967**	893	1019
Zinc	ppm	ASTM D5185m	1270	**1195**	1090	1170
Sulfur	ppm	ASTM D5185m	2060	**3564**	3427	3080

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**9**	9	8
Sodium	ppm	ASTM D5185m		**2**	5	0
Potassium	ppm	ASTM D5185m	>20	**4**	4	1
Fuel	%	ASTM D3524	>5	● **8.5**	▲ 5.2	▲ 3.9

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.4**	0.3	0.3
Nitration	Abs/cm	*ASTM D7624	>20	**6.5**	5.8	5.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	**17.8**	17.4	17.2

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**14.1**	13.0	12.8
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**9.40**	11.01	9.50

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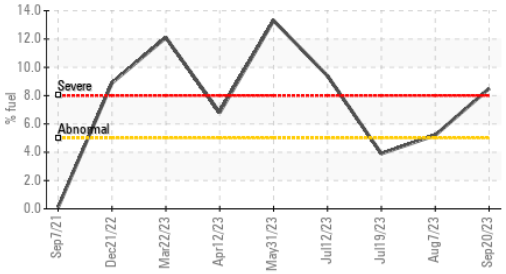
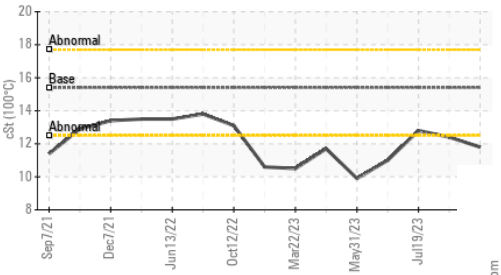
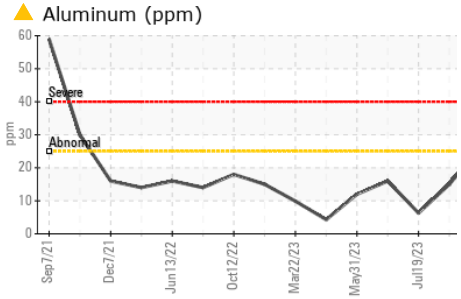
Fuel Dilution



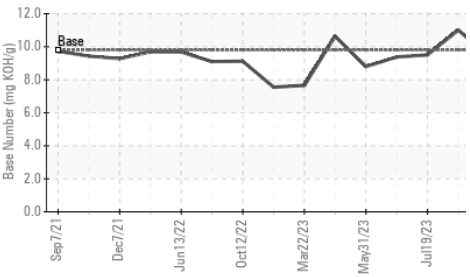
Viscosity @ 100°C



Aluminum (ppm)



Base Number

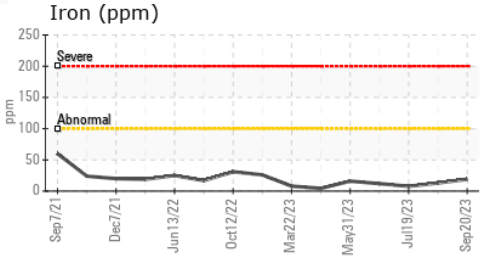


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

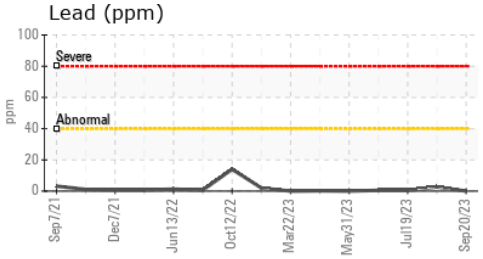
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	▲ **11.8**	▲ 12.4	12.8

GRAPHS

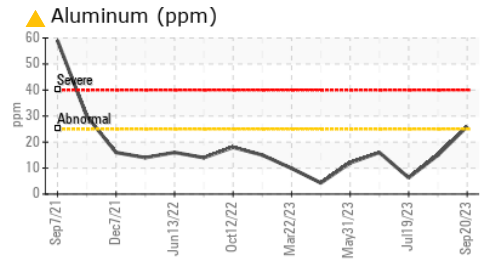
Iron (ppm)



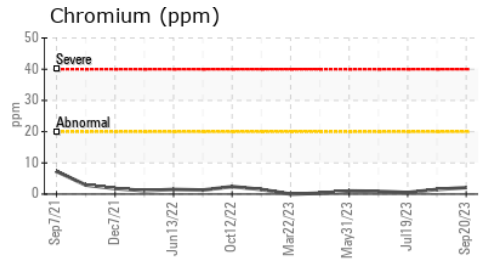
Lead (ppm)



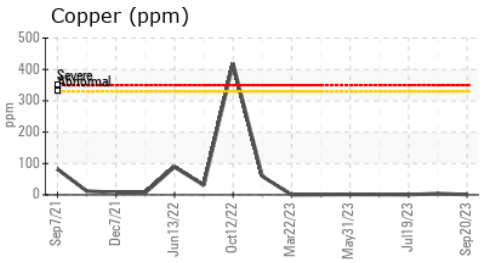
Aluminum (ppm)



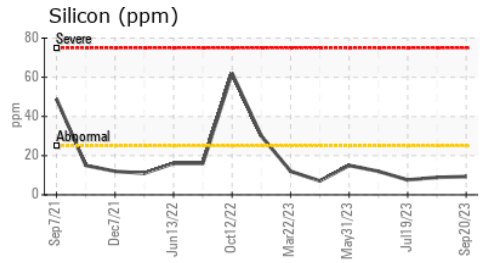
Chromium (ppm)



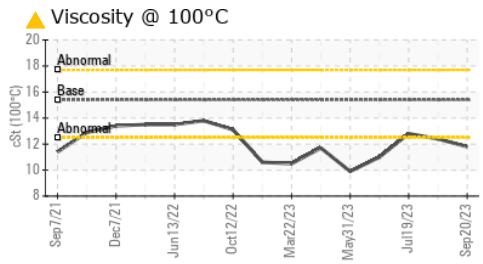
Copper (ppm)



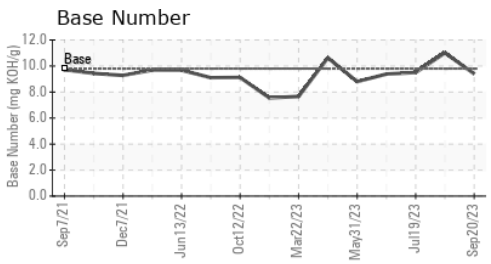
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0090496 **Received** : 22 Sep 2023
Lab Number : 05958733 **Diagnosed** : 26 Sep 2023
Unique Number : 10659946 **Diagnostician** : Wes Davis
Test Package : MOB 2 (Additional Tests: 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: WINTAU [WUSCAR] 05958733 (Generated: 09/26/2023 10:50:17) Rev: 1

Submitted By: MATT MANOLI