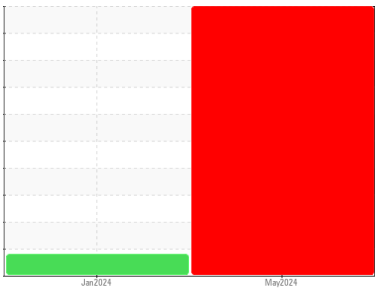
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
OR128
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 10W30 (--- LTR)

DIAGNOSIS

Recommendation
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend that you drain the oil from the component if this has not already been done. We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

Wear
Iron ppm levels are severe. PQ levels are abnormal. Aluminum ppm levels are noted. Cylinder, crank, or cam shaft wear is indicated. The high ferrous density (PQ) index indicates that abnormal wear is occurring.

Contamination
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. High amount of ingressed dirt has caused abrasive wear to the component.

Fluid Condition
Viscosity of sample indicates oil is within SAE 40 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. 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		**GFL0119015**	GFL0101697	---
Sample Date		Client Info		**28 May 2024**	01 Jan 2024	---
Machine Age	hrs	Client Info		**3029**	3079	---
Oil Age	hrs	Client Info		**0**	0	---
Oil Changed		Client Info		**N/A**	Changed	---
Sample Status				**SEVERE**	ABNORMAL	---

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	---
Water		WC Method	>0.2	**NEG**	NEG	---
Glycol		WC Method		**NEG**	NEG	---

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		▲ **57**	41	---
Iron	ppm	ASTM D5185(m)	>100	▲ **248**	▲ 100	---
Chromium	ppm	ASTM D5185(m)	>20	**8**	4	---
Nickel	ppm	ASTM D5185(m)	>4	**<1**	<1	---
Titanium	ppm	ASTM D5185(m)		**<1**	0	---
Silver	ppm	ASTM D5185(m)	>3	**0**	0	---
Aluminum	ppm	ASTM D5185(m)	>20	● **26**	12	---
Lead	ppm	ASTM D5185(m)	>40	**24**	7	---
Copper	ppm	ASTM D5185(m)	>330	**47**	15	---
Tin	ppm	ASTM D5185(m)	>15	**3**	1	---
Antimony	ppm	ASTM D5185(m)		**0**	0	---
Vanadium	ppm	ASTM D5185(m)		**0**	0	---
Beryllium	ppm	ASTM D5185(m)		**0**	0	---
Cadmium	ppm	ASTM D5185(m)		**0**	0	---

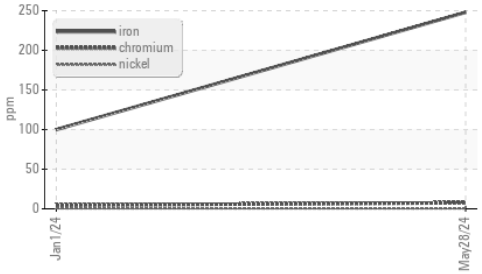
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	2	**22**	36	---
Barium	ppm	ASTM D5185(m)	0	**<1**	0	---
Molybdenum	ppm	ASTM D5185(m)	50	**67**	53	---
Manganese	ppm	ASTM D5185(m)	0	**3**	<1	---
Magnesium	ppm	ASTM D5185(m)	950	● **517**	595	---
Calcium	ppm	ASTM D5185(m)	1050	● **1492**	1427	---
Phosphorus	ppm	ASTM D5185(m)	995	● **611**	781	---
Zinc	ppm	ASTM D5185(m)	1180	● **823**	887	---
Sulfur	ppm	ASTM D5185(m)	2600	**1928**	2144	---
Lithium	ppm	ASTM D5185(m)		**<1**	<1	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	▲ **64**	24	---
Sodium	ppm	ASTM D5185(m)		**7**	3	---
Potassium	ppm	ASTM D5185(m)	>20	**2**	3	---

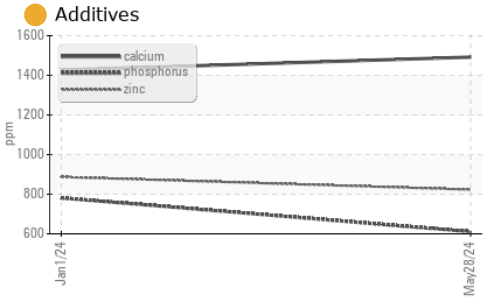
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0**	0	---
Nitration	Abs/cm	ASTM D7624*	>20	**10.4**	6.3	---
Sulfation	Abs/.1mm	ASTM D7415*	>30	**21.6**	19.9	---

OIL ANALYSIS REPORT

Ferrous Alloys

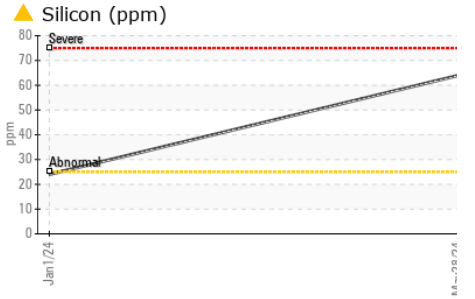


Additives

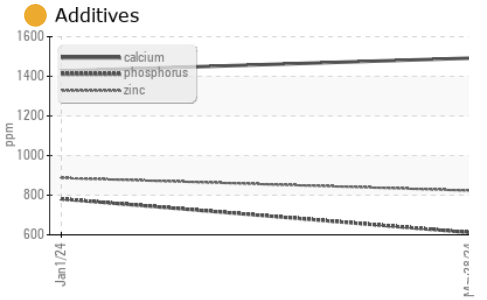


FT-IR (Direct Trend)

Silicon (ppm)



Additives



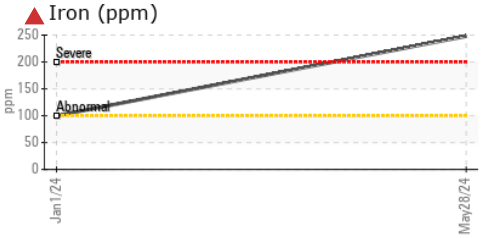
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**17.9**	15.3	---

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	---	---
Yellow Metal	scalar	Visual*	NONE	**NONE**	---	---
Precipitate	scalar	Visual*	NONE	**NONE**	---	---
Silt	scalar	Visual*	NONE	**VLITE**	---	---
Debris	scalar	Visual*	NONE	**NONE**	---	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	---	---
Appearance	scalar	Visual*	NORML	**NORML**	---	---
Odor	scalar	Visual*	NORML	**NORML**	NORML	---
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	---
Free Water	scalar	Visual*		**NEG**	NEG	---

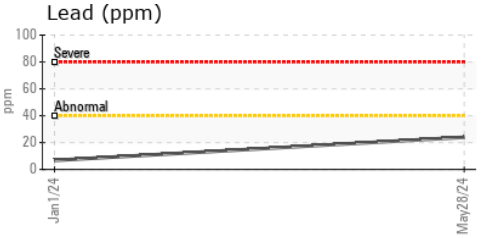
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	12.00	▲ **14.8**	14.2	---

GRAPHS

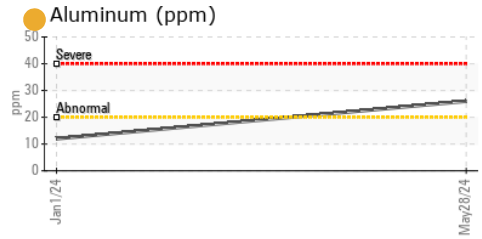
Iron (ppm)



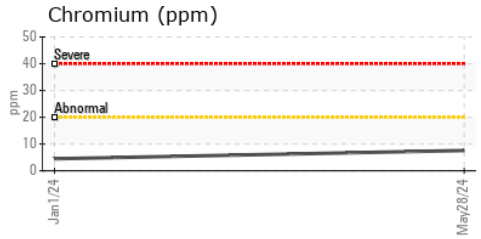
Lead (ppm)



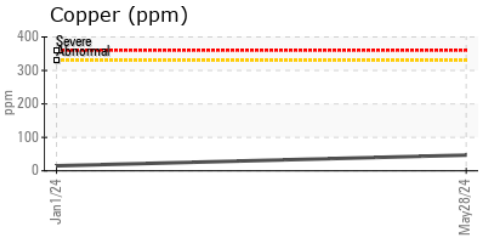
Aluminum (ppm)



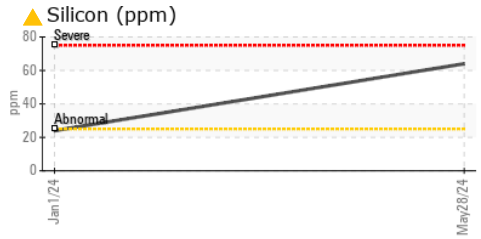
Chromium (ppm)



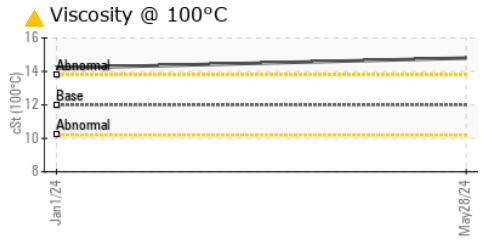
Copper (ppm)



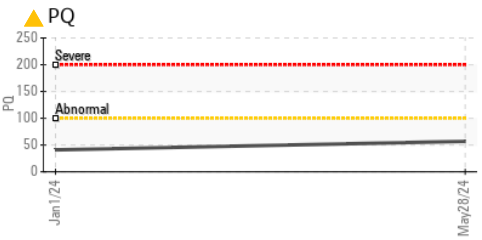
Silicon (ppm)



Viscosity @ 100°C



PQ



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : GFL0119015
Lab Number : 02638394
Unique Number : 5787556
Test Package : MOB 1 (Additional Tests: PQ, Visual)

Received : 29 May 2024
Tested : 30 May 2024
Diagnosed : 30 May 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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Report Id: GFL554 [WCAMIS] 02638394 (Generated: 05/30/2024 13:24:04) Rev: 1

Contact/Location: Tim Greig - GFL554