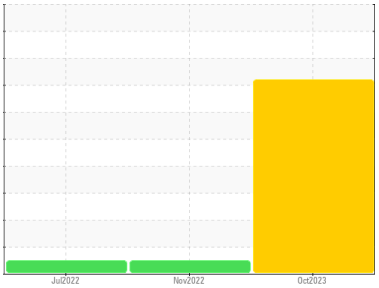
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
810000
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

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. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

Chromium and iron ppm levels are abnormal. Aluminum ppm levels are noted. Cylinder, crank, or cam shaft wear is indicated. Ring wear is indicated.

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

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		**GFL0079212**	GFL0057910	GFL0056094
Sample Date		Client Info		**04 Oct 2023**	05 Nov 2022	12 Jul 2022
Machine Age	hrs	Client Info		**8463**	7178	77412
Oil Age	hrs	Client Info		**600**	600	0
Oil Changed		Client Info		**Changed**	Changed	N/A
Sample Status				**SEVERE**	NORMAL	NORMAL

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

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*	>65	**0**	---	---
Iron	ppm	ASTM D5185(m)	>80	▲ **97**	32	35
Chromium	ppm	ASTM D5185(m)	>5	▲ **6**	1	1
Nickel	ppm	ASTM D5185(m)	>2	**1**	<1	<1
Titanium	ppm	ASTM D5185(m)		**0**	<1	<1
Silver	ppm	ASTM D5185(m)	>3	**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>30	▲ **12**	4	4
Lead	ppm	ASTM D5185(m)	>30	**<1**	0	0
Copper	ppm	ASTM D5185(m)	>150	**4**	2	2
Tin	ppm	ASTM D5185(m)	>5	**0**	<1	<1
Antimony	ppm	ASTM D5185(m)		**0**	<1	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

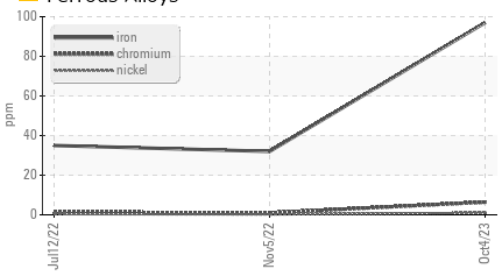
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	**5**	4	3
Barium	ppm	ASTM D5185(m)	0	**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)	60	**66**	62	61
Manganese	ppm	ASTM D5185(m)	0	**<1**	<1	<1
Magnesium	ppm	ASTM D5185(m)	1010	**1017**	1008	1001
Calcium	ppm	ASTM D5185(m)	1070	**1134**	1161	1141
Phosphorus	ppm	ASTM D5185(m)	1150	**1034**	1082	1005
Zinc	ppm	ASTM D5185(m)	1270	**1256**	1245	1267
Sulfur	ppm	ASTM D5185(m)	2060	**2320**	2437	2416
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>20	● **40**	9	6
Sodium	ppm	ASTM D5185(m)		**11**	10	10
Potassium	ppm	ASTM D5185(m)	>20	**3**	3	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**1.1**	1.4	1.6
Nitration	Abs/cm	ASTM D7624*	>20	**10.1**	10.5	10.9
Sulfation	Abs/.1mm	ASTM D7415*	>30	**22.7**	25.3	23.9

OIL ANALYSIS REPORT

Ferrous Alloys



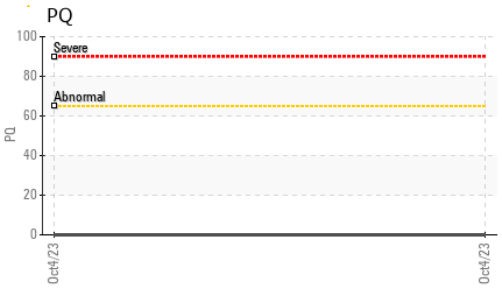
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**18.2**	17.8	18.8

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

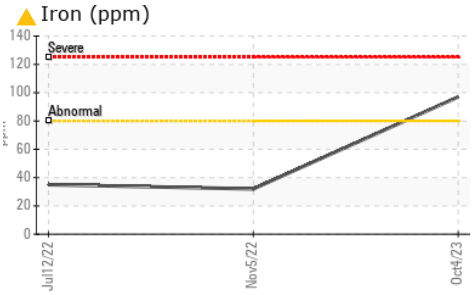
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	15.4	**13.9**	14.6	14.6

GRAPHS

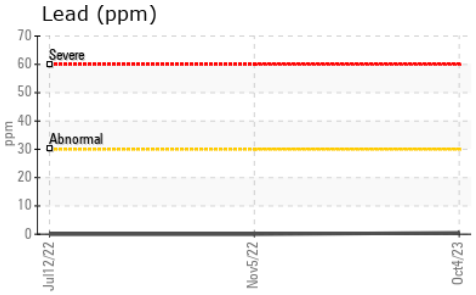
PQ



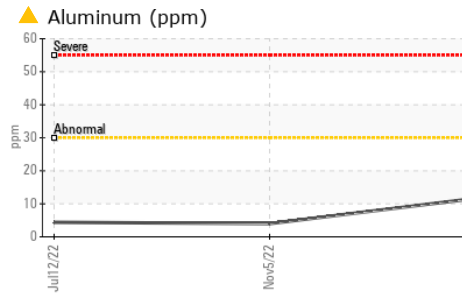
Iron (ppm)



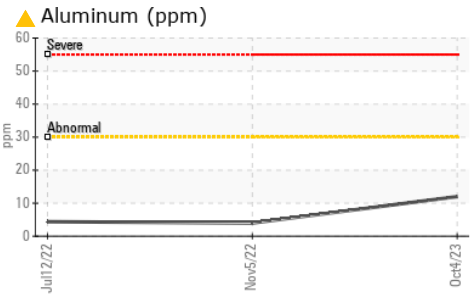
Lead (ppm)



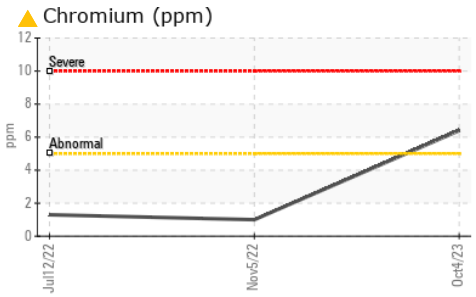
Aluminum (ppm)



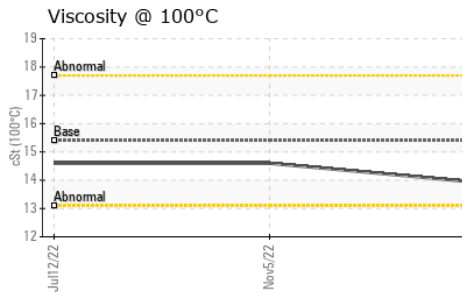
Aluminum (ppm)



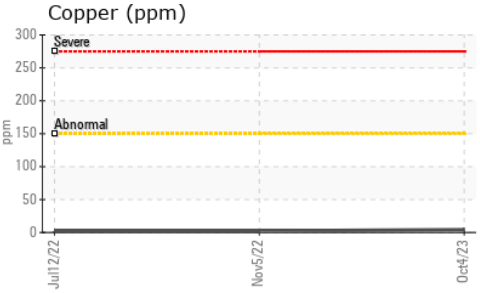
Chromium (ppm)



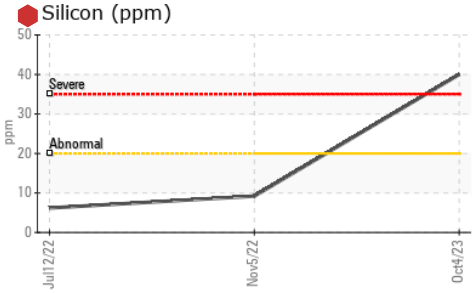
Viscosity @ 100°C



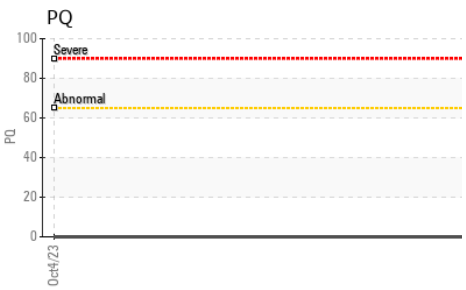
Copper (ppm)



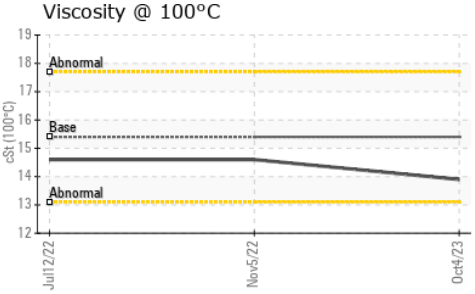
Silicon (ppm)



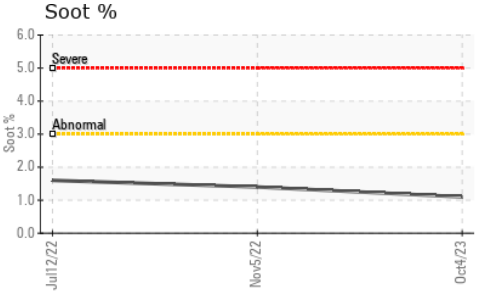
PQ



Viscosity @ 100°C



Soot %



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **GFL Environmental - 250 - Sault Ste Marie Hauling + MRF**
Sample No. : GFL0079212 **Received** : 06 Oct 2023
Lab Number : 02587457 **Diagnosed** : 06 Oct 2023
Unique Number : 5656523 **Diagnostician** : Kevin Marson
Test Package : MOB 1 (Additional Tests: PQ)

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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.