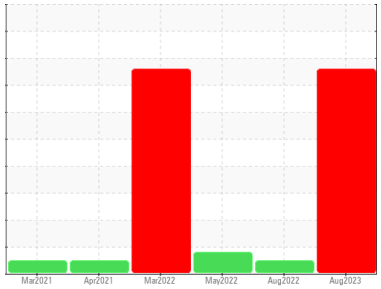
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
501030
Component
Diesel Engine
Fluid
PETRO CANADA DURON XL SYN BLEND 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. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

Wear

Aluminum ppm levels are severe. Light concentration of visible metal present. Piston wear is indicated.

Contamination

There is a moderate concentration of dirt present in the oil. High amount of ingressed dirt has caused abrasive wear to the component.

Fluid Condition

Additive levels indicate the addition of a different brand, or type of oil. The BN result indicates that there is suitable alkalinity remaining in the oil. 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		**GFL0084357**	GFL0057776	GFL0052666
Sample Date		Client Info		**28 Aug 2023**	11 Aug 2022	17 May 2022
Machine Age	kms	Client Info		**178494**	675	393
Oil Age	kms	Client Info		**0**	675	393
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	NORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	0.0	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>100	**66**	11	13
Chromium	ppm	ASTM D5185(m)	>20	**4**	<1	1
Nickel	ppm	ASTM D5185(m)	>4	**2**	0	<1
Titanium	ppm	ASTM D5185(m)		**<1**	<1	0
Silver	ppm	ASTM D5185(m)	>3	**<1**	<1	<1
Aluminum	ppm	ASTM D5185(m)	>20	**153**	23	62
Lead	ppm	ASTM D5185(m)	>40	**6**	0	<1
Copper	ppm	ASTM D5185(m)	>330	**35**	4	5
Tin	ppm	ASTM D5185(m)	>15	**2**	<1	<1
Antimony	ppm	ASTM D5185(m)		**0**	<1	0
Vanadium	ppm	ASTM D5185(m)		**<1**	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)	1	**150**	6	7
Barium	ppm	ASTM D5185(m)	1	**0**	0	0
Molybdenum	ppm	ASTM D5185(m)	60	**79**	57	59
Manganese	ppm	ASTM D5185(m)	1	**2**	<1	<1
Magnesium	ppm	ASTM D5185(m)	1010	**465**	917	981
Calcium	ppm	ASTM D5185(m)	1070	**1409**	1138	1069
Phosphorus	ppm	ASTM D5185(m)	1150	**1011**	964	1033
Zinc	ppm	ASTM D5185(m)	1270	**1231**	1176	1227
Sulfur	ppm	ASTM D5185(m)	2060	**2163**	2548	2595
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**36**	6	11
Sodium	ppm	ASTM D5185(m)		**3**	2	1
Potassium	ppm	ASTM D5185(m)	>20	**4**	8	2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0.7**	0.3	0.1
Nitration	Abs/cm	ASTM D7624*	>20	**8.1**	6.9	6.7
Sulfation	Abs/.1mm	ASTM D7415*	>30	**23.5**	19.8	20.6

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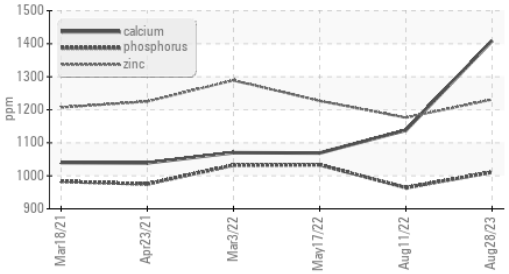
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**16.0**	14.6	14.0
Base Number (BN)	mg KOH/g	ASTM D2896*	9.6	**5.70**	8.90	9.72

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

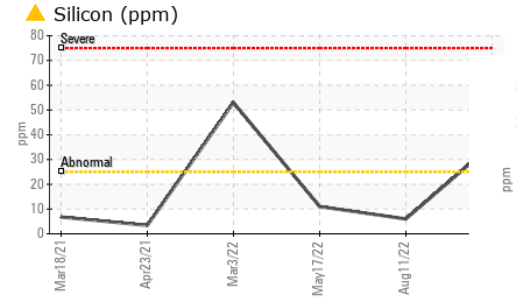
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	15.5	**13.7**	13.6	13.8

GRAPHS

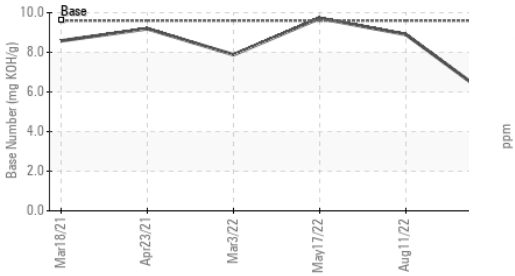
Additives



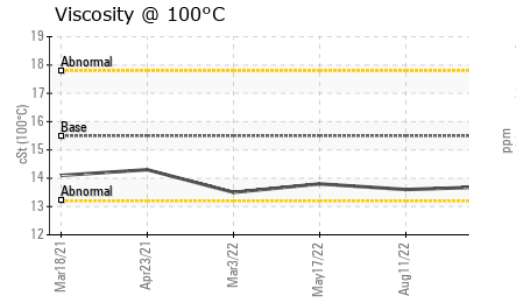
Silicon (ppm)



Base Number



Viscosity @ 100°C



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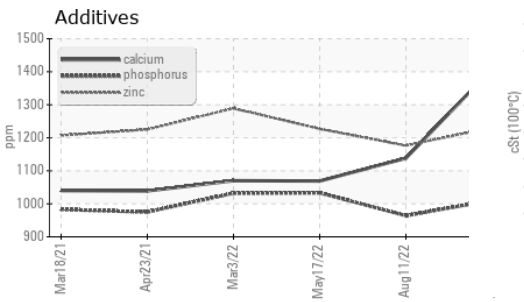
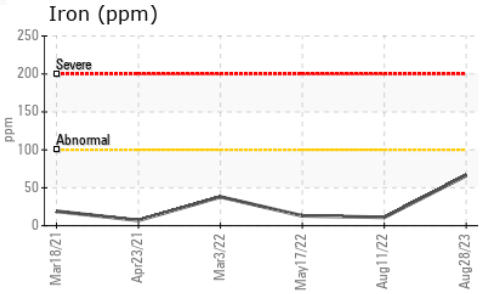
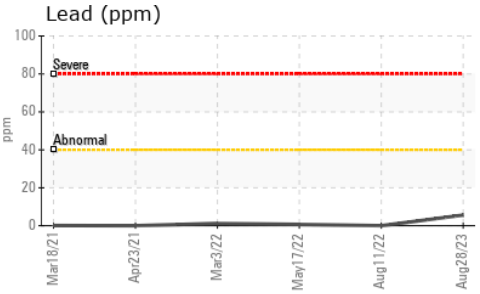


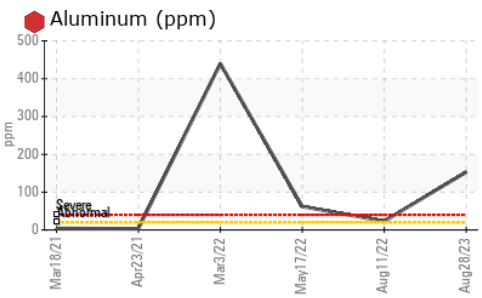
Iron (ppm)



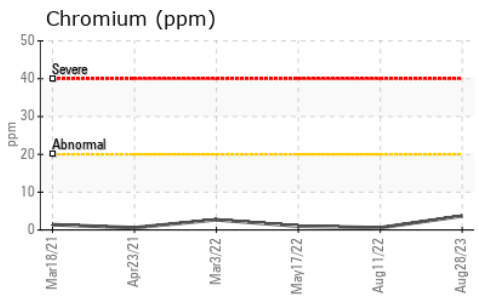
Lead (ppm)



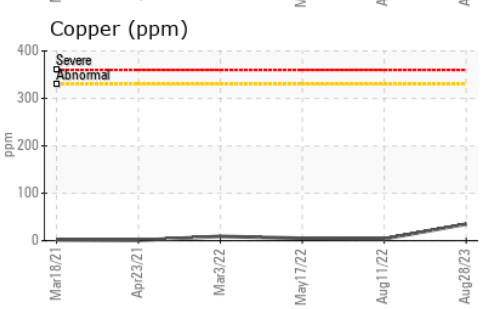
Aluminum (ppm)



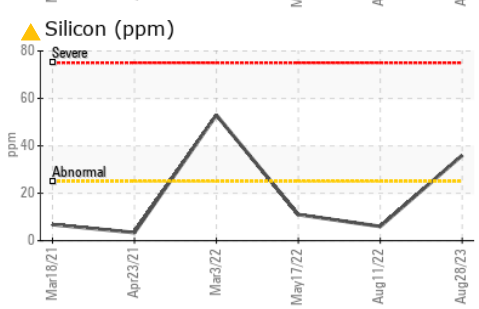
Chromium (ppm)



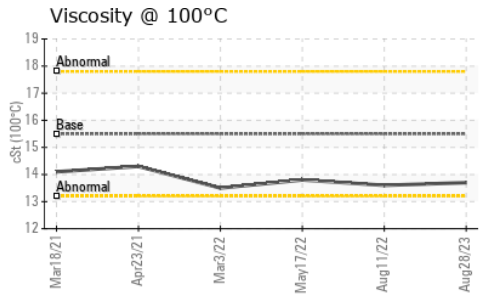
Copper (ppm)



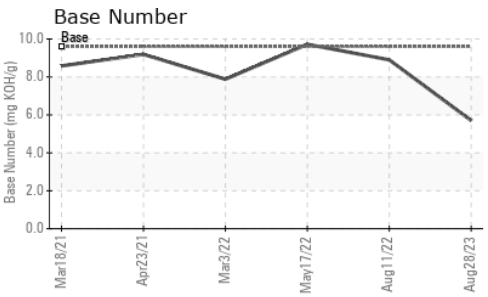
Silicon (ppm)



Viscosity @ 100°C



Base Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : GFL0084357
Lab Number : 02581111
Unique Number : 5642176
Test Package : MOB 2 (Additional Tests: BottomAnalysis, FILTERPATCH)

Received : 08 Sep 2023
Diagnosed : 12 Sep 2023
Diagnostician : 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: GFL550 [WCAMIS] 02581111 (Generated: 09/12/2023 12:12:41) Rev: 2

Submitted By: GFL Calgary