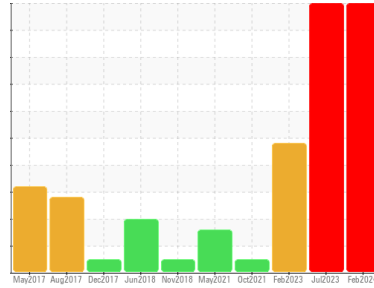




OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL



Machine Id
4582

Component
Diesel Engine

Fluid
PETRO CANADA DURON HP 15W40 (--- GAL)

DIAGNOSIS

▲ Recommendation

We advise that you check for the source of the coolant leak. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

▲ Wear

Aluminum, iron and nickel ppm levels are abnormal. Cylinder, crank, or cam shaft wear is indicated. Exhaust valve wear is indicated. Piston wear is indicated.

▲ Contamination

Test for glycol is positive. There is a high concentration of glycol present in the oil.

● Fluid Condition

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	GFL0112389	GFL0084286	GFL0072832
Sample Date	Client Info	28 Feb 2024	12 Jul 2023	16 Feb 2023
Machine Age	kms	Client Info	28044	27909
Oil Age	kms	Client Info	600	0
Oil Changed	Client Info	Changed	Changed	N/A
Sample Status		SEVERE	SEVERE	ABNORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >5	<1.0	0.8	<1.0
Water	WC Method >0.2	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2	
PQ	ASTM D8184*	>30	0	0	---
Iron	ppm	ASTM D5185(m) >110	▲ 136	▲ 226	38
Chromium	ppm	ASTM D5185(m) >4	<1	2	2
Nickel	ppm	ASTM D5185(m) >2	▲ 3	▲ 12	1
Titanium	ppm	ASTM D5185(m)	0	<1	<1
Silver	ppm	ASTM D5185(m) >2	0	<1	0
Aluminum	ppm	ASTM D5185(m) >25	▲ 36	▲ 83	4
Lead	ppm	ASTM D5185(m) >45	4	16	2
Copper	ppm	ASTM D5185(m) >85	36	▲ 128	1
Tin	ppm	ASTM D5185(m) >4	<1	<1	0
Antimony	ppm	ASTM D5185(m)	0	0	<1
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	8	36	8
Barium	ppm	ASTM D5185(m) 0	0	0	0
Molybdenum	ppm	ASTM D5185(m) 60	58	67	60
Manganese	ppm	ASTM D5185(m) 0	2	6	<1
Magnesium	ppm	ASTM D5185(m) 1010	905	929	951
Calcium	ppm	ASTM D5185(m) 1070	1009	956	1111
Phosphorus	ppm	ASTM D5185(m) 1150	978	1035	1058
Zinc	ppm	ASTM D5185(m) 1270	1120	1171	1176
Sulfur	ppm	ASTM D5185(m) 2060	2605	2483	2571
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m) >30	14	14	11
Sodium	ppm	ASTM D5185(m)	● 223	● 895	● 28
Potassium	ppm	ASTM D5185(m) >20	▲ 134	▲ 578	▲ 14
Glycol	%	ASTM D7922*	▲ 0.179	▲ 0.05	▲ 0.029

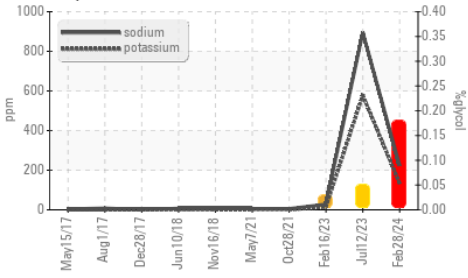
INFRA-RED

method	limit/base	current	history1	history2	
Soot %	%	ASTM D7844* >3	0.2	0.3	0.5
Nitration	Abs/cm	ASTM D7624* >20	8.1	15.9	7.5
Sulfation	Abs./1mm	ASTM D7415* >30	18.9	19.7	21.6

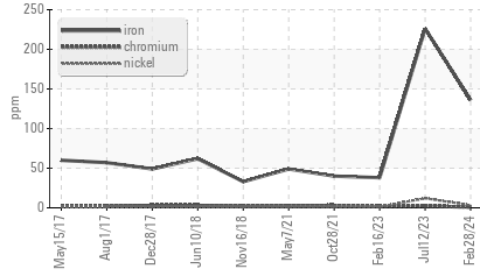


OIL ANALYSIS REPORT

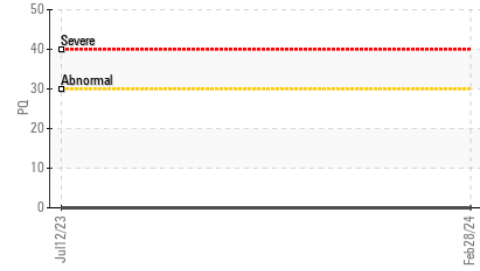
Glycol Contamination



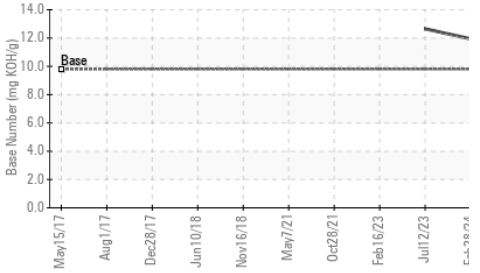
Ferrous Alloys



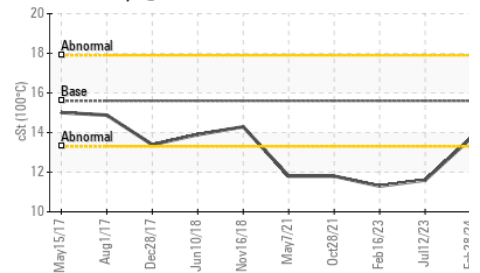
PQ



Base Number



Viscosity @ 100°C



FLUID DEGRADATION

method	limit/base	current	history1	history2	
Oxidation	Abs./1mm ASTM D7414*	>25	14.5	15.7	14.8
Base Number (BN)	mg KOH/g ASTM D2896*	9.8	11.94	12.65	---

VISUAL

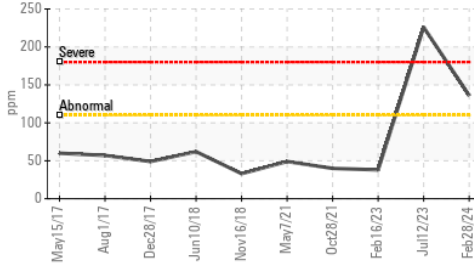
method	limit/base	current	history1	history2	
Emulsified Water	scalar Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar Visual*		NEG	NEG	NEG

FLUID PROPERTIES

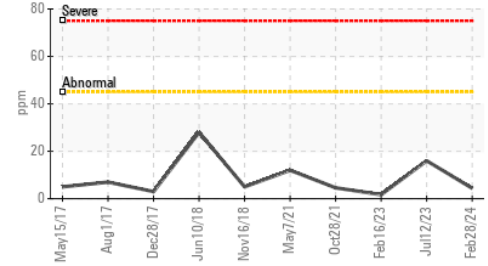
method	limit/base	current	history1	history2	
Visc @ 100°C	cSt ASTM D7279(m)	15.6	13.7	▲ 11.6	11.3

GRAPHS

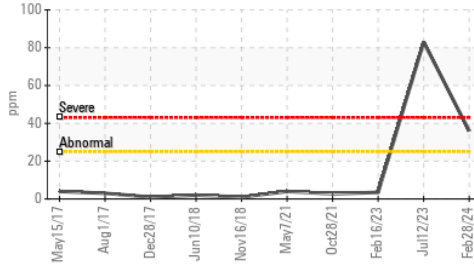
Iron (ppm)



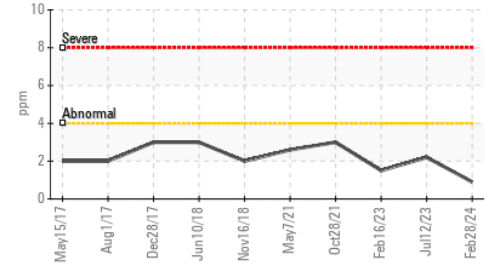
Lead (ppm)



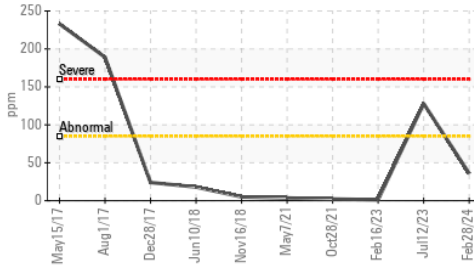
Aluminum (ppm)



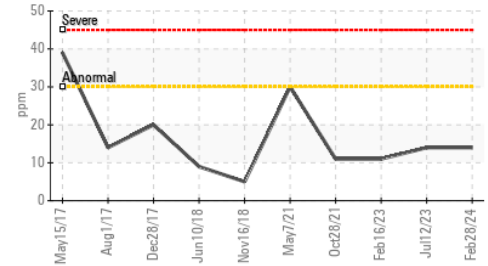
Chromium (ppm)



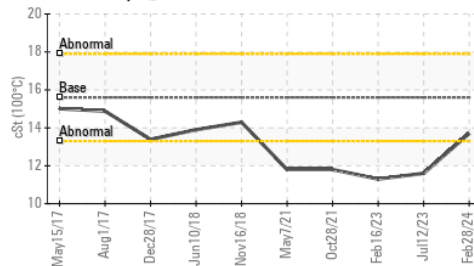
Copper (ppm)



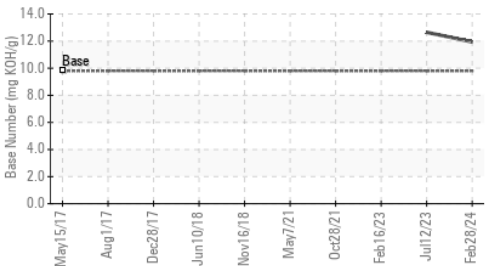
Silicon (ppm)



Viscosity @ 100°C



Base Number



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
 Sample No. : GFL0112389
 Lab Number : 02619524
 Unique Number : 5736634
 Test Package : MOB 2 (Additional Tests: PQ)

Received : 04 Mar 2024
 Tested : 05 Mar 2024
 Diagnosed : 05 Mar 2024 - Kevin Marson

GFL Environmental - 550 - Rocky View County
 220 Carmek Blvd
 Rocky View County, AB
 CA T1X 1X1
 Contact: GFL Calgary
 calgarymaintenance@gflenv.com

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.

T:
F: (403)369-6163