

WEAR NORMAL CONTAMINATION SEVERE FLUID CONDITION ATTENTION

Current

GFL0112415

17 Feb 2024

1127673

Changed

0

0

History1

0

0

Changed

History2

GFL0099530 GFL0084358

18 Dec 2023 24 Aug 2023

1120848 1109579

0

0

Changed

Limit/Abn



RECOMMENDATION

4490 Component Diesel Engine

PETRO CANADA DURON XL SYN BLEND 15W40 (--- GAL)

Test

Sample Number

Sample Date

Machine Age

Oil Age

Filter Age

Oil Changed

UOM

kms

kms

kms

Method

Client Info

Client Info

Client Info

Client Info

Client Info

Client Info

Ol's set la fa

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.

W	H /	AR.

All component wear rates are normal.

CONTAMINATION

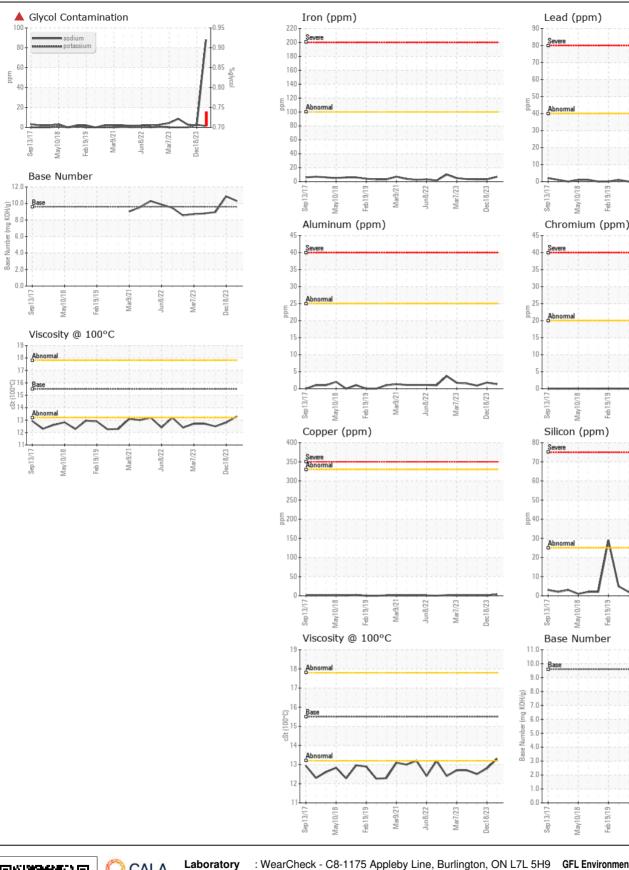
Test for glycol is positive. There is a high concentration of glycol present in the oil.

Sample Status SEVERE NORMAL NORMAL Iron ppm ASTM D5165(m) >100 7 3 3 Chromium ppm ASTM D5165(m) >20 0 0 0 Nickel ppm ASTM D5165(m) >2 <1 <1 0 Titanium ppm ASTM D5165(m) >2 0 0 0 Aluminum ppm ASTM D5165(m) >2 1 2 <1 Lead ppm ASTM D5165(m) >2 1 <1 <1 Copper ppm ASTM D5165(m) >30 4 <1 <1 Tin ppm ASTM D5165(m) >15 0 0 0 Vanadium ppm ASTM D5165(m) >25 5 4 5 Potassium ppm ASTM D5165(m) >25 1 2 0 Silicon ppm ASTM D5165(m) >25 5 5 5 5 Glycol % ASTM D71624' >20 5.8 5.7 5.7 <t< th=""><th>Filter Changed</th><th></th><th>Client Info</th><th></th><th>Changed</th><th>Changed</th><th>Changed</th></t<>	Filter Changed		Client Info		Changed	Changed	Changed
Chromium ppm ASTM D5185(m) >20 0 0 0 Nickel ppm ASTM D5185(m) >2 <1	Sample Status				SEVERE	NORMAL	NORMAL
Nickel ppm ASTM D5185(m) >2 <1	Iron	ppm	ASTM D5185(m)	>100	7	3	3
Titanium ppm ASTM D5185(m) 0 0 0 Silver ppm ASTM D5185(m) >2 0 0 0 Aluminum ppm ASTM D5185(m) >25 1 2 <1	Chromium	ppm	ASTM D5185(m)	>20	0	0	0
Silver ppm ASTM D5185(m) >2 0 0 0 Aluminum ppm ASTM D5185(m) >25 1 2 <1	Nickel	ppm	ASTM D5185(m)	>2	<1	<1	0
Aluminum ppm ASTM D5185(m) >25 1 2 <1 Lead ppm ASTM D5185(m) >40 <1	Titanium	ppm	ASTM D5185(m)		0	0	0
Lead ppm ASTM D5185(m) >40 <1 <1 <1 Copper ppm ASTM D5185(m) >330 4 <1	Silver	ppm	ASTM D5185(m)	>2	0	0	0
Copper ppm ASTM D5185(m) >330 4 <1 <1 Tin ppm ASTM D5185(m) >15 0 0 0 Vanadium ppm ASTM D5185(m) >25 5 4 5 Potassium ppm ASTM D5185(m) >20 1 2 0 Fuel WC Method >6.0 <1.0	Aluminum	ppm	ASTM D5185(m)	>25	1	2	<1
Tin ppm ASTM D5185(m) >15 0 0 0 Vanadium ppm ASTM D5185(m) >15 0 0 0 0 Silicon ppm ASTM D5185(m) >25 5 4 5 Potassium ppm ASTM D5185(m) >20 1 2 0 Fuel WC Method >6.0 <1.0 2.8 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol % ASTM D7922* ▲ 0.739 NEG NEG Soot % % ASTM D7415* >30 17.1 18.6 20.2 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 1 4 2 3 Boron ppm ASTM D5185(m) 1 0 0 0 0 Magnesium ppm ASTM D5185(m) 1 0 <th< td=""><th>Lead</th><td>ppm</td><td>ASTM D5185(m)</td><td>>40</td><th><1</th><td><1</td><td><1</td></th<>	Lead	ppm	ASTM D5185(m)	>40	<1	<1	<1
Vanadium ppm ASTM D5185(m) C O O O Silicon ppm ASTM D5185(m) >25 5 4 5 Potassium ppm ASTM D5185(m) >20 1 2 0 Fuel WC Method >6.0 <1.0	Copper	ppm	ASTM D5185(m)	>330	4	<1	<1
Silicon ppm ASTM D5185(m) >25 5 4 5 Potassium ppm ASTM D5185(m) >20 1 2 0 Fuel WC Method >6.0 <1.0	Tin	ppm	ASTM D5185(m)	>15	0	0	0
Potassium ppm ASTM D5165(m) >20 1 2 0 Fuel WC Method >6.0 <1.0	Vanadium	ppm	ASTM D5185(m)		0	0	0
Fuel WC Method >6.0 <1.0	Silicon	ppm	ASTM D5185(m)	>25	5	4	5
Water WC Method >0.2 NEG NEG NEG Glycol % ASTM D7922* ▲ 0.739 NEG NEG Soot % % ASTM D7844* >3 0 0 0 Nitration Abs/cm ASTM D7624* >20 5.8 5.7 5.7 Sulfation Abs/cm ASTM D7624* >20 5.8 5.7 5.7 Sulfation Abs/cm ASTM D7624* >20 NEG NEG NEG Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Manganese ppm ASTM D5185(m) 1 0 0 <1	Potassium	ppm	ASTM D5185(m)	>20	1	2	0
Glycol % ASTM D7922* ▲ 0.739 NEG NEG Soot % % ASTM D7844* >3 0 0 0 Nitration Abs/cm ASTM D7624* >20 5.8 5.7 5.7 Sulfation Abs/.1mm ASTM D7624* >20 5.8 5.7 5.7 Sulfation Abs/.1mm ASTM D7415* >30 17.1 18.6 20.2 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Molybdenum ppm ASTM D5185(m) 1 0 0 <11	Fuel		WC Method	>6.0	<1.0	2.8	<1.0
Soot % % ASTM D7844* >3 0 0 0 Nitration Abs/cm ASTM D7624* >20 5.8 5.7 5.7 Sulfation Abs/.1mm ASTM D7624* >30 17.1 18.6 20.2 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) - 88 2 3 Boron ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Molybdenum ppm ASTM D5185(m) 1 0 0 <11	Water		WC Method	>0.2	NEG	NEG	NEG
Nitration Abs/cm ASTM D7624* >20 5.8 5.7 5.7 Sulfation Abs/.1mm ASTM D7624* >30 17.1 18.6 20.2 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 6 88 2 3 Boron ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Malganese ppm ASTM D5185(m) 1 0 <<11 1 Magnesium ppm ASTM D5185(m) 1 0 <11 1 Calcium ppm ASTM D5185(m) 100 0 <11 10 913 Calcium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1070 943 1047 972 Ph	Glycol	%	ASTM D7922*		a 0.739	NEG	NEG
Sulfation Abs/.1mm ASTM D7415* >30 17.1 18.6 20.2 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 888 2 3 Boron ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Molybdenum ppm ASTM D5185(m) 1 0 0 <11	Soot %	%	ASTM D7844*	>3	0	0	0
Emulsified WaterscalarVisual*>0.2NEGNEGNEGSodiumppmASTM D5185(m)•8823BoronppmASTM D5185(m)1442BariumppmASTM D5185(m)1000MolybdenumppmASTM D5185(m)100<1	Nitration	Abs/cm	ASTM D7624*	>20	5.8	5.7	5.7
Sodium ppm ASTM D5185(m) 88 2 3 Boron ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Molybdenum ppm ASTM D5185(m) 1 0 0 0 Manganese ppm ASTM D5185(m) 1 0 0 <11	Sulfation	Abs/.1mm	ASTM D7415*	>30	17.1	18.6	20.2
Boron ppm ASTM D5185(m) 1 4 4 2 Barium ppm ASTM D5185(m) 1 0 0 0 Molybdenum ppm ASTM D5185(m) 1 0 0 0 Manganese ppm ASTM D5185(m) 60 55 56 53 Manganese ppm ASTM D5185(m) 1 0 0 <1 Magnesium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1010 943 1047 972 Phosphorus ppm ASTM D5185(m) 1270 1120 1126 1103 Zinc ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414*<>25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D289	Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Barium ppm ASTM D5185(m) 1 0 0 0 Molybdenum ppm ASTM D5185(m) 60 55 56 53 Manganese ppm ASTM D5185(m) 1 0 0 <1 Magnesium ppm ASTM D5185(m) 1 0 0 <1 Magnesium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1010 943 1047 972 Phosphorus ppm ASTM D5185(m) 1150 929 986 991 Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414*<>25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Sodium	ppm	ASTM D5185(m)		88	2	3
Molybdenum ppm ASTM D5185(m) 60 55 56 53 Manganese ppm ASTM D5185(m) 1 0 0 <1 Magnesium ppm ASTM D5185(m) 1 0 0 <1 Magnesium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1070 943 1047 972 Phosphorus ppm ASTM D5185(m) 1150 929 986 991 Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Boron	ppm	ASTM D5185(m)	1	4	4	2
Manganese ppm ASTM D5185(m) 1 0 0 <1 Magnesium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1010 943 1047 972 Phosphorus ppm ASTM D5185(m) 1150 929 986 991 Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Barium	ppm	ASTM D5185(m)	1	0	0	0
Magnesium ppm ASTM D5185(m) 1010 807 918 913 Calcium ppm ASTM D5185(m) 1070 943 1047 972 Phosphorus ppm ASTM D5185(m) 1150 929 986 991 Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.951	Molybdenum	ppm	ASTM D5185(m)	60	55	56	53
Calcium ppm ASTM D5185(m) 1070 943 1047 972 Phosphorus ppm ASTM D5185(m) 1150 929 986 991 Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.951	Manganese	ppm	ASTM D5185(m)	1	0	0	<1
Phosphorus ppm ASTM D5185(m) 1150 929 986 991 Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Magnesium	ppm	ASTM D5185(m)	1010	807	918	913
Zinc ppm ASTM D5185(m) 1270 1120 1126 1103 Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Calcium	ppm	ASTM D5185(m)	1070	943	1047	972
Sulfur ppm ASTM D5185(m) 2060 2575 2674 2466 Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Phosphorus	ppm	ASTM D5185(m)	1150	929	986	991
Oxidation Abs/.1mm ASTM D7414* >25 13.9 15.0 15.4 Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Zinc	ppm	ASTM D5185(m)	1270	1120	1126	1103
Base Number (BN) mg KOH/g ASTM D2896* 9.6 10.30 10.86 8.95	Sulfur	ppm	ASTM D5185(m)	2060	2575	2674	2466
	Oxidation	Abs/.1mm	ASTM D7414*	>25	13.9	15.0	15.4
Visc @ 100°C cSt ASTM D7279(m) 15.5 13.3 12.8 12.5	Base Number (BN)	mg KOH/g	ASTM D2896*	9.6	10.30	10.86	8.95
	Visc @ 100°C	cSt	ASTM D7279(m)	15.5	13.3	12.8	12.5

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

Submitted By: GFL Calgary



Received

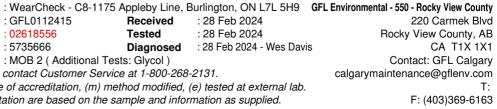
Diagnosed

Tested

: 28 Feb 2024

: 28 Feb 2024

: 28 Feb 2024 - Wes Davis



108/27

Mar9/21

CALA

ISO 17025:2017 Accredited Laboratory

Sample No.

Lab Number : 02618556

Unique Number : 5735666

: GFL0112415

To discuss this sample report, contact Customer Service at 1-800-268-2131.

Test Package : MOB 2 (Additional Tests: Glycol)

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

ppm

Base

Submitted By: GFL Calgary Page 2 of 2

Mar7/23 -

Dec18/23

Dec18/23 -

Mar7/23

Aar7/23

lec18/23

102/27