

## **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 934057

Component **Natural Gas Engine** 

PETRO CANADA DURON GEO LD 15W40 (--- GAL)

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

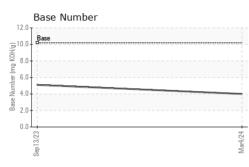
## Fluid Condition

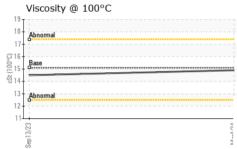
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

			,	marcer.		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0114481	GFL0093239	
Sample Date		Client Info		04 Mar 2024	13 Sep 2023	
Machine Age	mls	Client Info		1772	584	
Oil Age	mls	Client Info		0	584	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	ATTENTION	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	23	46	
Chromium	ppm	ASTM D5185m	>4	2	<1	
Nickel	ppm	ASTM D5185m	>2	<1	<1	
Titanium	ppm	ASTM D5185m		0	0	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>9	12	9 19	
Lead	ppm	ASTM D5185m	>30	1	3	
Copper	ppm	ASTM D5185m	>35	2	14	
Tin	ppm	ASTM D5185m	>4	0	2	
Vanadium	ppm	ASTM D5185m		<1	<1	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		method	limit/base		historv1	historv2
ADDITIVES	0000		limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	50	6	15	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	6 0	15 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	6 0 55	15 0 60	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	6 0 55 1	15 0 60 14	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	6 0 55 1 606	15 0 60 14 825	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510	6 0 55 1 606 1695	15 0 60 14 825 1380	   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	6 0 55 1 606 1695 741	15 0 60 14 825 1380 710	   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870	6 0 55 1 606 1695 741 1005	15 0 60 14 825 1380 710 968	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	6 0 55 1 606 1695 741	15 0 60 14 825 1380 710	   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040	6 0 55 1 606 1695 741 1005 2871 current	15 0 60 14 825 1380 710 968 2682 history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 >+100	6 0 55 1 606 1695 741 1005 2871 current 6	15 0 60 14 825 1380 710 968 2682 history1 32	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 >+100	6 0 55 1 606 1695 741 1005 2871 current	15 0 60 14 825 1380 710 968 2682 history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	6 0 55 1 606 1695 741 1005 2871 current 6	15 0 60 14 825 1380 710 968 2682 history1 32	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	6 0 55 1 606 1695 741 1005 2871 current 6 7 34	15 0 60 14 825 1380 710 968 2682 <u>history1</u> 32 6	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>limit/base</b> >+100	6 0 55 1 606 1695 741 1005 2871 current 6 7 34	15 0 60 14 825 1380 710 968 2682 history1 32 6 6 6 6	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 2040 >+100 >20 20 20 20	6 0 55 1 606 1695 741 1005 2871 current 6 7 34 current	15 0 60 14 825 1380 710 968 2682 <u>history1</u> 32 6 6 66 66	     history2    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 2040 >+100 >20 20 20 20	6 0 55 1 606 1695 741 1005 2871 <u>current</u> 6 7 34 <u>current</u> 0	15 0 60 14 825 1380 710 968 2682 history1 32 6 6 6 6 6 6 6 1 bistory1 0.1	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 imit/base >+100 >20 imit/base	6 0 55 1 606 1695 741 1005 2871 <i>current</i> 6 7 34 <i>current</i> 0 11.3	15 0 60 14 825 1380 710 968 2682 history1 32 6 6 6 6 6 6 6 6 6 1 0.1	     history2   history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 imit/base >+100 imit/base >20 30 imit/base	6 0 55 1 606 1695 741 1005 2871 <b>current</b> 6 7 34 <b>current</b> 0 11.3 22.2	15 0 60 14 825 1380 710 968 2682 history1 32 6 6 6 6 6 6 6 6 0 1 0.1 0.1 0.1 10.8 21.9	     history2  history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	50 50 0 560 1510 780 870 2040 imit/base >+100 imit/base >20 30 imit/base	6 0 55 1 606 1695 741 1005 2871 current 6 7 34 current 0 11.3 22.2	15 0 60 14 825 1380 710 968 2682 history1 32 6 6 6 6 6 6 6 0.1 10.8 21.9 history1	     history2  history2  history2  history2



# **OIL ANALYSIS REPORT**





White Metal scalar   Yellow Metal scalar   Precipitate scalar   Silt scalar   Debris scalar   Sand/Dirt scalar   Appearance scalar   Odor scalar   Emulsified Water scalar   Free Water scalar   Visc @ 100°C cSt   GRAPHS scalar   Serrous Alloys scalar   Image: Serie	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual ASTM D445	NONE NONE NONE NONE NORML >0.1 Imit/base	NONE NONE NONE NONE NOR NOR NOR NEG NEG 14.9	NONE NONE NONE NONE NORML NORML NEG NEG history1 14.5	        history2
Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar Free Water scalar Stalar Free Water scalar Free Water scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NORML >0.1	NONE NONE NONE NORML NORML NEG NEG	NONE NONE NONE NORML NORML NEG NEG history1	     history2
Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	*Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML >0.1	NONE NONE NORML NORML NEG NEG	NONE NONE NORML NORML NEG NEG history1	     history2
Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	*Visual *Visual *Visual *Visual *Visual method	NONE NORML NORML >0.1	NONE NORML NORML NEG NEG Current	NONE NORML NORML NEG NEG history1	    history2
Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	*Visual *Visual *Visual *Visual *Visual method	NONE NORML NORML >0.1	NONE NORML NORML NEG NEG current	NONE NORML NORML NEG NEG history1	   history2
Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	*Visual *Visual *Visual *Visual method	NORML NORML >0.1	NORML NORML NEG NEG current	NORML NORML NEG NEG history1	   history2
Odor scalar Emulsified Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	*Visual *Visual *Visual method	NORML >0.1 limit/base	NORML NEG NEG current	NORML NEG NEG history1	  history2
Emulsified Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	*Visual *Visual method	>0.1 limit/base	NEG NEG current	NEG NEG history1	  history2
Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys 50 40 40 40 40 40 40 40 40 40 4	*Visual method	limit/base	NEG current	NEG history1	 history2
FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	method		current	history1	history2
Visc @ 100°C cSt GRAPHS Ferrous Alloys					
GRAPHS Ferrous Alloys	ASTM D445	15.1	14.9	14.5	
Ferrous Alloys					
Non-ferrous Metals		Mar4/24			

Base Number

12.0

10

8 ( 6.0 ber

4.0 Base

2 (

0.0

Sep13/23

Mar4/24 -

: 11 Mar 2024

: 12 Mar 2024

(mg KOH/g)



Unique Number : 10923812 Diagnosed : 13 Mar 2024 - Jonathan Hester Test Package : FLEET Contact: Saul Castillo Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. saul.castillo@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Tested

Sep13/23

19

18

17

(100°C)

5 14

13 Abno

12 11

Laboratory Sample No.

Lab Number : 06114979

Sep13/23

: GFL0114481

Viscosity @ 100°C

Submitted By: TECHNICIAN ACCOUNT

GFL Environmental - 865 - East Mount Hauling

7213 East Mount Houston Road

Houston, TX

US 77050

Mar4/24

Т:

F: