

# **OIL ANALYSIS REPORT**

Sample Rating Trend





Component

Natural Gas Engine

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

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Oil sample only )  $% \label{eq:commutative}$ 

### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

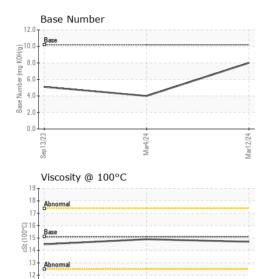
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

,			2023	Mar2024 Mar20		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0114474	GFL0114481	GFL0093239
Sample Date		Client Info		12 Mar 2024	04 Mar 2024	13 Sep 2023
Machine Age	mls	Client Info		27646	1772	584
Oil Age	mls	Client Info		0	0	584
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	7	23	46
Chromium	ppm	ASTM D5185m	>4	<1	2	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	2	12	<u> </u>
Lead	ppm	ASTM D5185m	>30	0	1	3
Copper	ppm	ASTM D5185m	>35	<1	2	14
Tin	ppm	ASTM D5185m	>4	0	0	2
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 50	current 29	history1 6	history2 15
	ppm ppm					
Boron		ASTM D5185m	50	29	6	15
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	29 0	6 0	15 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	29 0 48	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	29 0 48 <1	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 ASTM D5185m	50 5 50 0 560	29 0 48 <1 554	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	29 0 48 <1 554 1548	6 0 55 1 606 1695	15 0 60 14 825 1380
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	29 0 48 <1 554 1548 752	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	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870	29 0 48 <1 554 1548 752 901	6 0 55 1 606 1695 741 1005	15 0 60 14 825 1380 710 968 2682 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm 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>	29 0 48 <1 554 1548 752 901 2891	6 0 55 1 606 1695 741 1005 2871	15 0 60 14 825 1380 710 968 2682
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 5 50 0 560 1510 780 870 2040 <b>limit/base</b>	29 0 48 <1 554 1548 752 901 2891 current	6 0 55 1 606 1695 741 1005 2871 history1	15 0 60 14 825 1380 710 968 2682 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm 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>	29 0 48 <1 554 1548 752 901 2891 2891 current 4	6 0 55 1 606 1695 741 1005 2871 history1	15 0 60 14 825 1380 710 968 2682 history2 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	29 0 48 <1 554 1548 752 901 2891 2891 Current 4 5	6 0 55 1 606 1695 741 1005 2871 <b>history1</b> 6 7	15 0 60 14 825 1380 710 968 2682 <u>history2</u> 32 6
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	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	29 0 48 <1 554 1548 752 901 2891 current 4 5 4	6 0 55 1 606 1695 741 1005 2871 history1 6 7 34	15 0 60 14 825 1380 710 968 2682 history2 32 6 6 6 66
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>Imit/base</b> >20 2040	29 0 48 <1 554 1548 752 901 2891 2891 current 4 5 4 2 0 0 1 2891	6 0 55 1 606 1695 741 1005 2871 <b>history1</b> 6 7 34 <b>history1</b>	15 0 60 14 825 1380 710 968 2682 <b>history2</b> 32 6 6 66 66 <b>history2</b>
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	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>Imit/base</b> >20 2040	29 0 48 <1 554 1548 752 901 2891 <u>current</u> 4 5 4 <u>current</u> 0	6 0 55 1 606 1695 741 1005 2871 history1 6 7 34 history1 0	15 0 60 14 825 1380 710 968 2682 history2 32 6 6 6 6 6 6 6 1 bistory2
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 2040 >+100 >20 imit/base >20	29 0 48 <1 554 1548 752 901 2891 current 4 5 4 5 4 current 0 7.1	6 0 55 1 606 1695 741 1005 2871 history1 6 7 34 history1 0 0 11.3	15 0 60 14 825 1380 710 968 2682 history2 32 6 6 6 6 6 6 6 6 1 10.8
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 50 560 1510 780 870 2040 <b>Imit/base</b> >20 <b>Imit/base</b> >20 <b>Imit/base</b>	29 0 48 <1 554 1548 752 901 2891 current 4 5 4 5 4 <b>current</b> 0 7.1 19.1	6 0 55 1 606 1695 741 1005 2871 <b>history1</b> 6 7 34 <b>history1</b> 0 11.3 22.2	15 0 60 14 825 1380 710 968 2682 <b>history2</b> 32 6 6 66 66 <b>history2</b> 0.1 10.8 21.9
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 D7844 *ASTM D7844	50 50 50 150 1510 780 870 2040 imit/base >+100 >20 imit/base >20 >30	29 0 48 <1 554 1548 752 901 2891 current 4 5 4 5 4 current 0 7.1 19.1	6 0 55 1 606 1695 741 1005 2871 history1 6 7 34 history1 0 11.3 22.2 history1	15 0 60 14 825 1380 710 968 2682 history2 32 6 6 66 66 history2 0.1 10.8 21.9 history2



Sep13/23

# **OIL ANALYSIS REPORT**



A nd /D d

		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	14.7	14.9	14.5
GRAPHS						
Ferrous Alloys						
T iron 1						
and chromium						
nickel						
0+						
i i i i i i i i i i i i i i i i i i i						
o <b>-</b>						
0-			/			
	4					
0	Aar4/24		ar12/24			
Sep 13/23	Mart/24		Mar12/24			
Non-ferrous Metals			Mar1224			
Non-ferrous Metals			Mar1224			
Non-ferrous Metals			Mar1224			
Non-ferrous Metals			Mar12/24			
Non-ferrous Metals			Mar12/24			
Non-ferrous Metals			Mar12/24			
Non-ferrous Metals			Mar12/24			
Non-ferrous Metals						
Non-ferrous Metals	5					
Non-ferrous Metals	5					
Non-ferrous Metals						
Non-ferrous Metals	5			Base Number		
Non-ferrous Metals	5			T ;		
Non-ferrous Metals	5		12.0 10.0	Base Number		
Non-ferrous Metals	5		12.0 10.0	T ;		
Non-ferrous Metals	5		12.0 10.0	T ;		
Non-ferrous Metals	5		12.0 10.0	Base		
Non-ferrous Metals	5		12.0 (0)HOX 8.0 E	Base		

0.0

Sep13/23

Mar12/24 -

: 19 Mar 2024

: 20 Mar 2024



Unique Number : 10937159 Diagnosed : 21 Mar 2024 - Don Baldridge Test Package : FLEET 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)

Mar4/24

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

Received

Tested

Sep13/23

: GFL0114474

12 11

Lab Number : 06123008

Laboratory Sample No.

Report Id: GFL865 [WUSCAR] 06123008 (Generated: 03/21/2024 16:56:33) Rev: 1

Submitted By: TECHNICIAN ACCOUNT

Mar4/24 -

GFL Environmental - 865 - East Mount Hauling

7213 East Mount Houston Road

Houston, TX US 77050

Contact: Saul Castillo

Mar12/24

T:

F: