

## **OIL ANALYSIS REPORT**

### (YA133467) [0111066] **2640C** Component

**Natural Gas Engine** 

PETRO CANADA DURON GEO LD 15W40 (38 GAL)

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

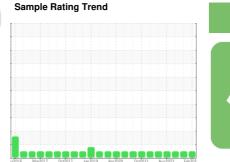
All component wear rates are normal.

#### 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.



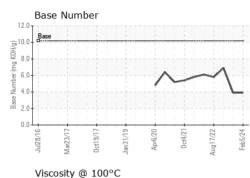


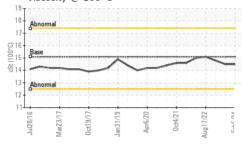
NORMAL

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0111066	GFL0073833	GFL0059715
Sample Date		Client Info		05 Feb 2024	26 Apr 2023	19 Oct 2022
Machine Age	hrs	Client Info		13588	12514	11744
Oil Age	hrs	Client Info		1074	1132	362
Oil Changed		Client Info		Oil Added	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
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	4	13	7
Chromium	ppm	ASTM D5185m	>4	<1	3	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	2	2	1
Lead	ppm	ASTM D5185m	>30	2	7	<1
Copper	ppm	ASTM D5185m	>35	0	1	<1
Tin	ppm	ASTM D5185m	>4	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 50	current 12	history1 0	history2 15
Boron Barium	ppm ppm					
Boron		ASTM D5185m	50	12 0 53	0	15
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5 50	12 0	0 0	15 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	12 0 53	0 0 54 1 638	15 0 50 <1 541
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510	12 0 53 <1	0 0 54 1	15 0 50 <1
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 1510 780	12 0 53 <1 558	0 0 54 1 638 1869 812	15 0 50 <1 541 1649 753
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	12 0 53 <1 558 1511	0 0 54 1 638 1869	15 0 50 <1 541 1649
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	12 0 53 <1 558 1511 675	0 0 54 1 638 1869 812	15 0 50 <1 541 1649 753
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	12 0 53 <1 558 1511 675 945	0 0 54 1 638 1869 812 1088	15 0 50 <1 541 1649 753 896
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 ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040	12 0 53 <1 558 1511 675 945 2275	0 0 54 1 638 1869 812 1088 3271	15 0 50 <1 541 1649 753 896 2778
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 ASTM D5185m	50 5 50 0 560 1510 780 870 2040	12 0 53 <1 558 1511 675 945 2275 current	0 0 54 1 638 1869 812 1088 3271 history1	15 0 50 <1 541 1649 753 896 2778 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 <b>method</b>	50 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	12 0 53 <1 558 1511 675 945 2275 2275 current 5	0 0 54 1 638 1869 812 1088 3271 history1 2	15 0 50 <1 541 1649 753 896 2778 history2 5
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 <b>method</b> ASTM D5185m	50 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	12 0 53 <1 558 1511 675 945 2275 2275 current 5 6	0 0 54 1 638 1869 812 1088 3271 history1 2 8	15 0 50 <1 541 1649 753 896 2778 <b>bistory2</b> 5 5
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 0 560 1510 780 870 2040 <b>limit/base</b> >+100	12 0 53 <1 558 1511 675 945 2275 current 5 6 0	0 0 54 1 638 1869 812 1088 3271 history1 2 8 8 <1	15 0 50 <1 541 1649 753 896 2778 history2 5 5 5 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 2040 >+100 >20 20 }	12 0 53 <1 558 1511 675 945 2275 current 5 6 0	0 0 54 1 638 1869 812 1088 3271 history1 2 8 <1 2 1 8 <1	15 0 50 <1 541 1649 753 896 2778 <b>bistory2</b> 5 5 0 0 <b>bistory2</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 ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>Iimit/base</b> >+100 20 <b>Iimit/base</b>	12 0 53 <1 558 1511 675 945 2275 current 5 6 0 0 current 0	0 0 54 1 638 1869 812 1088 3271 history1 2 8 <1 history1 0.1	15 0 50 <1 541 1649 753 896 2778 <b>bistory2</b> 5 5 5 0 <b>bistory2</b> 0.1
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 <b>Iimit/base</b> >+100 20 <b>Iimit/base</b>	12 0 53 <1 558 1511 675 945 2275 <i>current</i> 5 6 0 <i>current</i> 0 11.7	0 0 54 1 638 1869 812 1088 3271 history1 2 8 <1 2 8 <1 history1 0.1 12.1	15 0 50 <1 541 1649 753 896 2778 history2 5 5 5 0 0 history2 0.1 11.0
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 imit/base >+100 imit/base >20 30	12 0 53 <1 558 1511 675 945 2275 <b>current</b> 5 6 0 0 <b>current</b> 0 11.7 24.0	0 0 54 1 638 1869 812 1088 3271 history1 2 8 <1 2 8 <1 0.1 12.1 26.1	15 0 50 <1 541 1649 753 896 2778 history2 5 5 5 0 0 history2 0.1 11.0 22.3



# **OIL ANALYSIS REPORT**





VISUAL		method				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	14.5	14.5	14.8
GRAPHS						

Ferrous Alloys 25 20 15 10 0. ua17/22 Mar23/1 Jul28/ an31/ Non-ferrous Metals 12 10 8 mqq 2 ug17/22 eb5/24 nr6/ Viscosity @ 100°C Base Number 19 12.0 18 10. 17 (mg KOH/g) ()-00 15 8 ( Number 6.0 5 14 4.0 Base 13 Abnorm 2 ( 12 0.0 0ct4/21 Aug17/22 . Feb5/24 -Jan31/19 Apr6/20 Jul28/16 Jan31/19 Apr6/20 Aug17/22 Feb5/24 0ct4/21 0ct19/17 Mar23/17 Oct19/17 Mar23/17 Jul28/1 GFL Environmental - 006 - Wilmington Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : GFL0111066 Received :07 Feb 2024 3618 US Highway 421 N Lab Number : 06082302 Tested :08 Feb 2024 Wilmington, NC Unique Number : 10869747 Diagnosed : 08 Feb 2024 - Wes Davis US 28401 Test Package : FLEET Contact: Eric Wood To discuss this sample report, contact Customer Service at 1-800-237-1369. eric.wood@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)

Certificate L2367

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