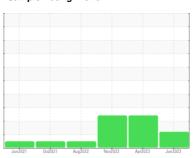


# **OIL ANALYSIS REPORT**

Sample Rating Trend







Machine Id **401170** 

Component **Natural Gas Engine** 

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

## **DIAGNOSIS**

### Recommendation

Check for low coolant level. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

## Contamination

Water treatment chemicals present, indicating slow coolant leak. Test for glycol is negative. There is no indication of any contamination in the oil.

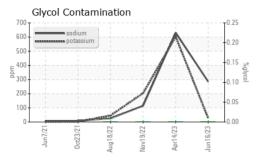
## Fluid Condition

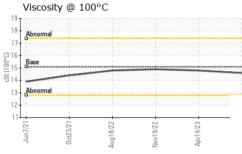
The condition of the oil is acceptable for the time in service (see recommendation).

( GAL)		Jun 2021	Oct2021 Aug2022	Nov2022 Apr2023	Jun2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0084062	GFL0073177	GFL0057465
Sample Date		Client Info		16 Jun 2023	14 Apr 2023	19 Nov 2022
Machine Age	hrs	Client Info		23761	23152	0
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	ABNORMAL	ABNORMAL
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>50	4	21	10
Chromium	ppm	ASTM D5185(m)	>4	<1	2	<1
Nickel	ppm	ASTM D5185(m)	>2	0	<1	<1
Titanium	ppm	ASTM D5185(m)		0	<1	<1
Silver	ppm	ASTM D5185(m)	>3	0	0	0
Aluminum	ppm	ASTM D5185(m)	>9	2	4	2
Lead	ppm	ASTM D5185(m)	>30	0	11	2
Copper	ppm	ASTM D5185(m)	>35	<1	4	1
Tin	ppm	ASTM D5185(m)	>4	0	<1	<1
Antimony	ppm	ASTM D5185(m)		0	<1	0
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)	50	27	7	9
	ppm ppm	ASTM D5185(m) ASTM D5185(m)	50 5			
Boron		. ,		27	7	9
Boron Barium	ppm	ASTM D5185(m)	5	27 0	7	9
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m)	5 50	27 0 57	7 0 98	9 0 59
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 50 0	27 0 57 <1	7 0 98 <1	9 0 59 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 50 0 560	27 0 57 <1 539	7 0 98 <1 558	9 0 59 <1 536
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 50 0 560 1510	27 0 57 <1 539 1448	7 0 98 <1 558 1653	9 0 59 <1 536 1600
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 50 0 560 1510 780	27 0 57 <1 539 1448 747	7 0 98 <1 558 1653 762	9 0 59 <1 536 1600 727
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 50 0 560 1510 780 870	27 0 57 <1 539 1448 747	7 0 98 <1 558 1653 762 912	9 0 59 <1 536 1600 727 860
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 50 0 560 1510 780 870	27 0 57 <1 539 1448 747 812 1914	7 0 98 <1 558 1653 762 912 2365	9 0 59 <1 536 1600 727 860 2087
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	5 50 0 560 1510 780 870 2040	27 0 57 <1 539 1448 747 812 1914	7 0 98 <1 558 1653 762 912 2365 <1	9 0 59 <1 536 1600 727 860 2087 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	5 50 0 560 1510 780 870 2040	27 0 57 <1 539 1448 747 812 1914 <1	7 0 98 <1 558 1653 762 912 2365 <1 history1	9 0 59 <1 536 1600 727 860 2087 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	5 50 0 560 1510 780 870 2040	27 0 57 <1 539 1448 747 812 1914 <1 current	7 0 98 <1 558 1653 762 912 2365 <1 history1 29	9 0 59 <1 536 1600 727 860 2087 <1 history2 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	5 50 0 560 1510 780 870 2040 limit/base >+100	27 0 57 <1 539 1448 747 812 1914 <1 current 6 ▲ 285	7 0 98 <1 558 1653 762 912 2365 <1 history1 29 ▲ 631	9 0 59 <1 536 1600 727 860 2087 <1 history2 10 ▲ 115
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium  CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)  MASTM D5185(m)  MASTM D5185(m)  ASTM D5185(m)  ASTM D5185(m)  ASTM D5185(m)  ASTM D5185(m)  ASTM D5185(m)  ASTM D5185(m)	5 50 0 560 1510 780 870 2040 limit/base >+100	27 0 57 <1 539 1448 747 812 1914 <1 current 6 285 27	7 0 98 <1 558 1653 762 912 2365 <1 history1 29 △ 631 △ 603	9 0 59 <1 536 1600 727 860 2087 <1 history2 10 115 203
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	5 50 0 560 1510 780 870 2040 limit/base >+100 >20	27 0 57 <1 539 1448 747 812 1914 <1 current 6 285 27 0.0	7 0 98 <1 558 1653 762 912 2365 <1 history1 29 ▲ 631 ▲ 603 0.0	9 0 59 <1 536 1600 727 860 2087 <1 history2 10 ▲ 115 ▲ 203 0.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium  CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7922*  method ASTM D7844*	5 50 0 560 1510 780 870 2040 limit/base >+100 >20	27 0 57 <1 539 1448 747 812 1914 <1 current 6 ▲ 285 27 0.0 current 0	7 0 98 <1 558 1653 762 912 2365 <1 history1 29 △ 631 △ 603 0.0 history1 0	9 0 59 <1 536 1600 727 860 2087 <1 history2 10 △ 115 △ 203 0.0 history2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	5 50 0 560 1510 780 870 2040 limit/base >+100 >20	27 0 57 <1 539 1448 747 812 1914 <1 current 6 ▲ 285 27 0.0 current	7 0 98 <1 558 1653 762 912 2365 <1 history1 29 △ 631 △ 603 0.0 history1	9 0 59 <1 536 1600 727 860 2087 <1 history2 10 ▲ 115 ▲ 203 0.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)  MASTM D5185(m)  MASTM D5185(m)  ASTM D7845  MASTM D7922*  Method  ASTM D7844*  ASTM D7844*  ASTM D7624*  ASTM D7415*	5 50 0 560 1510 780 870 2040  limit/base >+100 >20	27 0 57 <1 539 1448 747 812 1914 <1  current 6  285 27 0.0  current 0 7.5	7 0 98 <1 558 1653 762 912 2365 <1 history1 29 △ 631 △ 603 0.0 history1 0 13.2	9 0 59 <1 536 1600 727 860 2087 <1 history2 10 △ 115 △ 203 0.0 history2 0 7.3



## **OIL ANALYSIS REPORT**



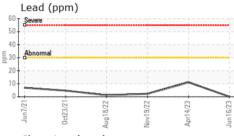


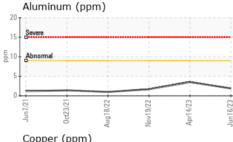
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE		
Yellow Metal	scalar	Visual*	NONE	NONE		
Precipitate	scalar	Visual*	NONE	NONE		
Silt	scalar	Visual*	NONE	NONE		
Debris	scalar	Visual*	NONE	NONE		
Sand/Dirt	scalar	Visual*	NONE	NONE		
Appearance	scalar	Visual*	NORML	NORML		
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	Visual*	>0.1	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
	DTIEC		Para tella a sa a		folia ta most	In late w O
FLUID PROPE	RHES	method	limit/base	current	history1	history2

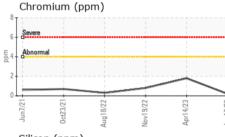
FLUID FROF	LHILS	method	IIIIII/Dase	Current	HISTOLAL	TilStory2
Visc @ 100°C	cSt	ASTM D7279(m)	15.1	14.6	14.8	14.9

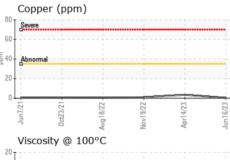
Iron	(ppm)				
Severe	2				
80					
Abnor	mal				
40					
20				_	
0					
Jun7/21	23/21	8/22	9/22	4/23	Jun16/23
in P	055	Aug18/2	Nov19/22	Apr14/2	Ju J
		,			

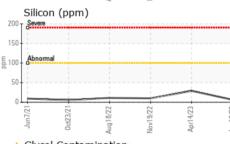
**GRAPHS** 

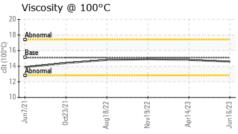


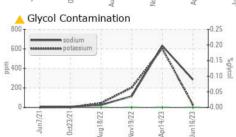














CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number **Unique Number** 

: 5607137

: GFL0084062 : 02570091

Received Diagnosed

: 14 Jul 2023 : 14 Jul 2023

Diagnostician : Kevin Marson

Test Package : MOB 1 (Additional Tests: Glycol, Visual) 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.

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 GFL Environmental - 574 - Vancouver Fleet 70 Golden Drive, Coquitlam, BC CA V3K 6B5

Contact: Allison Adams aadams@gflenv.com

T: (604)529-4023