

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend





## Diesel Engine

Fluid

### PETRO CANADA DURON GEO LD 15W40 (40 QTS)

## 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.

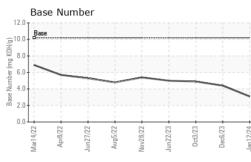
### Fluid Condition

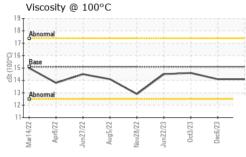
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM		method	limit/base	current	history1	history2
		Client Info		GFL0101773	GFL0090083	GFL0090097
Sample Number Sample Date		Client Info		12 Jan 2024	06 Dec 2023	03 Oct 2023
Machine Age	hrs	Client Info		5208	5208	4746
Oil Age	hrs	Client Info		600	600	600
Oil Changed	1115	Client Info		Changed	Changed	Changed
-		Client Into		NORMAL	NORMAL	NORMAL
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>165	4	5	4
Chromium	ppm	ASTM D5185m		0	<1	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	<1
Lead	ppm	ASTM D5185m	>150	3	2	<1
Copper	ppm	ASTM D5185m		2	3	1
Tin	ppm	ASTM D5185m	>5	_ <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		method ASTM D5185m	limit/base 50		history1 5	history2 8
Boron	ppm	ASTM D5185m		current 6 0		
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	50 5	6 0	5 0	8
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50	6 0 46	5 0 49	8
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	6 0 46 <1	5 0 49 <1	8 0 50 <1
Boron Barium Molybdenum	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	6 0 46	5 0 49	8 0 50 <1 556
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm 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 46 <1 543 1467	5 0 49 <1 578 1613	8 0 50 <1 556 1582
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	6 0 46 <1 543	5 0 49 <1 578	8 0 50 <1 556
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 46 <1 543 1467 701	5 0 49 <1 578 1613 763	8 0 50 <1 556 1582 689
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	6 0 46 <1 543 1467 701 913	5 0 49 <1 578 1613 763 982	8 0 50 <1 556 1582 689 937
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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	6 0 46 <1 543 1467 701 913 2311 current	5 0 49 <1 578 1613 763 982 2438 history1	8 0 50 <1 556 1582 689 937 2383 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	50 5 50 0 560 1510 780 870 2040	6 0 46 <1 543 1467 701 913 2311 current 7	5 0 49 <1 578 1613 763 982 2438 2438 history1 10	8 0 50 <1 556 1582 689 937 2383 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm 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 50 00 560 1510 780 870 2040 <b>limit/base</b>	6 0 46 <1 543 1467 701 913 2311 current	5 0 49 <1 578 1613 763 982 2438 history1	8 0 50 <1 556 1582 689 937 2383 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>limit/base</b> >35	6 0 46 <1 543 1467 701 913 2311 current 7 6 1	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5	8 0 50 <1 556 1582 689 937 2383 history2 4 6 6 <1
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 50 00 560 1510 780 870 2040 <b>Imit/base</b> >35 -20 <b>Imit/base</b>	6 0 46 <1 543 1467 701 913 2311 current 7 6 1 1 current	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5 5 history1	8 0 50 <1 556 1582 689 937 2383 history2 4 6 <1 ×1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	50 50 560 1510 780 870 2040 <b>Imit/base</b> >35 >20 <b>Imit/base</b> >20	6 0 46 <1 543 1467 701 913 2311 current 7 6 1 1 current 0	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5 5 history1 0.1	8 0 50 <1 556 1582 689 937 2383 history2 4 6 <1 6 1 2 1 history2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Solicon 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 >35 20 imit/base >7.5 >20	6 0 46 <1 543 1467 701 913 2311 <i>current</i> 7 6 1 <i>current</i> 0 11.2	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5 history1 0.1 12.2	8 0 50 <1 556 1582 689 937 2383 history2 4 6 <1 6 <1 history2 0 9.8
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> >35 >20 <b>Imit/base</b> >20	6 0 46 <1 543 1467 701 913 2311 current 7 6 1 1 current 0	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5 5 history1 0.1	8 0 50 <1 556 1582 689 937 2383 history2 4 6 <1 6 1 2 1 history2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Solicon 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 >35 20 imit/base >7.5 >20	6 0 46 <1 543 1467 701 913 2311 <i>current</i> 7 6 1 <i>current</i> 0 11.2	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5 history1 0.1 12.2	8 0 50 <1 556 1582 689 937 2383 history2 4 6 <1 6 <1 history2 0 9.8
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 50 150 780 870 2040 <b>imit/base</b> >35 20 <b>imit/base</b> >7.5 >20 >30	6 0 46 <1 543 1467 701 913 2311 current 7 6 1 1 current 0 11.2 23.7	5 0 49 <1 578 1613 763 982 2438 history1 10 9 5 5 history1 0.1 12.2 22.8	8 0 50 <1 556 1582 689 937 2383 <b>history2</b> 4 6 <1 <b>history2</b> 0 9.8 20.2



# **OIL ANALYSIS REPORT**





	VISUAL		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
3/23 - 3/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
0ct3/23 Dec6/23 Jan 12/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual	20.2	NEG	NEG	NEG
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.1	14.1	14.1	14.6
	GRAPHS						
	Ferrous Alloys						
/23	30 - iron 30 -						
0ct3/23 Dec6/23	25 - nickel						
	20						
	E <sup>20</sup> 15						
	10						
	5						
	5 5 5 5 0	3 5	n n				
	Mar14/22 Apr8/22 Jun27/22 Aug5/22	Nov28/22	0ct3/23 Dec6/23	Jan 12/24			
	2 7 7		o ă	Jar			
	Non-ferrous Meta	ls					
	14 copper						
	12 - lead						
	10						
	E 8						
		VA		and the second			
	2	Statement Statements	Viene	- Wander			
	22	22 -	23	24			
	Aar14/22 Apr8/22 Jun27/22 Aug5/22	Nov28/22	0ct3/23 Dec6/23	lan 12/24			
	Viscosity @ 100°(	-		7			
	<sup>19</sup> T				Base Numbe	er	
	18 - Abnormal			12.	Base		
	17		· · · · · · · · · · · · · · · · · · ·	10. S	0 - 4		
	ç 16 -			KOH 8.	0-		
	(3-00)) 15 33 14			 			
	<sup>4</sup> 3 <sub>14</sub>	/				~~~	
	10	$\checkmark$		V aseg	U +		
	13 Abnormal			2.	0		
		8/22	0ct3/23 - Dec6/23 -		Mar14/22 Apr8/22 -	Aug5/22 - Vov28/22 - Jun22/23 -	Oct3/23 - Dec6/23 -
	Mar14/22 Apr8/22 Jun27/22 Aug5/22	Nov28/22	Decf	Jan 12/24	Mar14/22 Apr8/22 Jun27/22	Aug5/22 Nov28/22 Jun22/23	0ct3/23 Dec6/23
- <b>h</b> •		504 M		NO 677			
aboratory	: WearCheck USA -				GFL En	vironmental - 030 - Co	
ample No. ab Number		Recieved Diagnose		Jan 2024 Jan 2024			3010 HWY 378
nique Number	: 10835541	Diagnose		s Davis			Conway, SO US 2952
est Package	: FLEET	Diagnosti		Davis		Contact: 4	ARCILIO RUEZ
	contact Customer Serv	/ice at 1-80	0-237-1369	).			iz@gflenv.con
	re outside of the ISO 1						T
ethods that a							

To discuss this samp \* - 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

Submitted By: TECHNICIAN ACCOUNT

F: