

# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 946029-260309

Component Natural Gas Engine

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

#### DIAGNOSIS

#### Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

## 🔺 Wear

The copper level is abnormal. All other component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

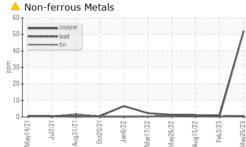
### Fluid Condition

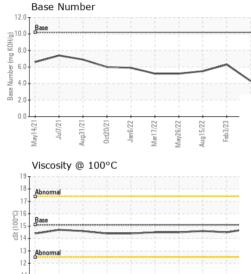
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number     Client Info     GFL0058500     GFL0058486     GFL0059486     Changed     Chang				limit/base			history
Sample Date     Client Info     25 May 2023     0.3 Feb 2023     15 Aug 2022       Machine Age     hrs     Client Info     5487     7269     38553       Oil Age     hrs     Client Info     600     1200     1200     1200       Oil Changed     Client Info     Changed     Cha				imitoase			
Machine Age     hrs     Client Info     5487     7269     38553       Oil Age     hrs     Client Info     600     1200     1200       Oil Age     hrs     Client Info     Changed     Changed     Changed       Sample Status     Imit/base     current     history1     history2       Water     WC Method     >0.1     NEG     NEG       Water     WC Method     >0.1     NEG     NEG       Chromium     ppm     ASTM D5185m     >50     8     10     8       Chromium     ppm     ASTM D5185m     >2     <1	•						
Oil Age     hrs     Client Info     600     1200     1200       Oil Changed     Client Info     Changed     NORMAL     NORMAL <t< td=""><td>•</td><td></td><td></td><td></td><td></td><td></td><td>0</td></t<>	•						0
Oil Changed Sample Status Client Info Changed ABNORMAL Changed NORMAL Changed NORMAL Changed NORMAL   CONTAMINATION method limit/base current history1 history2   Water WC Method >0.1 NEG NEG NEG   WEAR METALS method limit/base current history1 history2   Iron ppm ASTM D5185m >50 8 10 8   Chromium ppm ASTM D5185m >2 <1	U						
Sample Status     Image: Status     ABNORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Water     WC Method     >0.1     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     8     10     8       Chromium     ppm     ASTM D5185m     >2     <1     0     0     <1       Nickel     ppm     ASTM D5185m     >3     0     0     <1     1       Lead     ppm     ASTM D5185m     >3     0     0     <1     1       Lead     ppm     ASTM D5185m     >30     <1     <1     <1     <1       Cadmium     ppm     ASTM D5185m     >30     <1     <1     <1     <1       Lead     ppm     ASTM D5185m     >30     <1     <1     <1     <1<     <1     <1       <	-	hrs					
CONTAMINATION     method     limit/base     current     history1     history2       Water     WC Method     >0.1     NEG     NEG     NEG       Wear METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     8     10     8       Chromium     ppm     ASTM D5185m     >4     <1	•		Client Info		-		
Water     WC Method     >0.1     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     8     10     8       Chromium     ppm     ASTM D5185m     >2     -1     0     -1       Nickel     ppm     ASTM D5185m     >2     -1     0     -1       Nickel     ppm     ASTM D5185m     >3     0     0     -1       Silver     ppm     ASTM D5185m     >3     0     0     -1       Aluminum     ppm     ASTM D5185m     >3     0     0     -1       Copper     ppm     ASTM D5185m     >30     <1	Sample Status				ABNORMAL	NORMAL	NORMAL
WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     8     10     8       Chromium     ppm     ASTM D5185m     >4     <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron     ppm     ASTM D5185m     >50     8     10     8       Chromium     ppm     ASTM D5185m     >2     <1	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >4     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >2     <1     0     <1       Titanium     ppm     ASTM D5185m     0     0     <1	Iron	ppm	ASTM D5185m	>50	8	10	8
Titanium     ppm     ASTM D5185m     0     0     <1       Silver     ppm     ASTM D5185m     >3     0     0     <1	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver     ppm     ASTM D5185m     >3     0     0     <1       Aluminum     ppm     ASTM D5185m     >9     3     3     1       Lead     ppm     ASTM D5185m     >30     <1     <1     <1       Copper     ppm     ASTM D5185m     >35     ▲     52     <1     1       Tin     ppm     ASTM D5185m     >4     <1     0     <1       Vanadium     ppm     ASTM D5185m     >4     <1     0     <1       Vanadium     ppm     ASTM D5185m     >4     <1     0     <1     1       Vanadium     ppm     ASTM D5185m     50     6     8     2       Boron     ppm     ASTM D5185m     50     5     2     0     0       Magnese     ppm     ASTM D5185m     50     5     2     0     0       Magnesium     ppm     ASTM D5185m     560     500     485     568       Calcium     ppm     AST	Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum     ppm     ASTM D5185m     >9     3     3     1       Lead     ppm     ASTM D5185m     >30     <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead   ppm   ASTM D5185m   >30   <1	Silver	ppm	ASTM D5185m	>3	0	0	<1
Copper     ppm     ASTM D5185m     >35     52     <1     1       Tin     ppm     ASTM D5185m     >4     <1	Aluminum	ppm	ASTM D5185m	>9	3	3	1
Tin     ppm     ASTM D5185m     >4     <1     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0     <1	Lead	ppm	ASTM D5185m	>30	<1	<1	<1
Vanadium     ppm     ASTM D5185m     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     6     8     2       Barium     ppm     ASTM D5185m     5     2     0     0       Molybdenum     ppm     ASTM D5185m     5     2     0     0       Magnesium     ppm     ASTM D5185m     50     57     49     53       Magnesium     ppm     ASTM D5185m     560     500     485     568       Calcium     ppm     ASTM D5185m     1510     1570     1296     1473       Phosphorus     ppm     ASTM D5185m     780     670     707     735       Zinc     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     hi	Copper	ppm	ASTM D5185m	>35	<u> </u>	<1	1
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     6     8     2       Barium     ppm     ASTM D5185m     50     6     8     2       Barium     ppm     ASTM D5185m     50     57     49     53       Manganese     ppm     ASTM D5185m     0     <1	Tin	ppm	ASTM D5185m	>4	<1	0	<1
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     6     8     2       Barium     ppm     ASTM D5185m     50     5     2     0     0       Molybdenum     ppm     ASTM D5185m     50     57     49     53       Manganese     ppm     ASTM D5185m     0     <1	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron     ppm     ASTM D5185m     50     6     8     2       Barium     ppm     ASTM D5185m     5     2     0     0       Molybdenum     ppm     ASTM D5185m     50     57     49     53       Manganese     ppm     ASTM D5185m     0     <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     ppm     ASTM D5185m     5     2     0     0       Molybdenum     ppm     ASTM D5185m     50     57     49     53       Manganese     ppm     ASTM D5185m     0     <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     50     57     49     53       Manganese     ppm     ASTM D5185m     0     <1	Boron	ppm	ASTM D5185m	50	6	8	2
Manganese     ppm     ASTM D5185m     0     <1     <1     <1       Magnesium     ppm     ASTM D5185m     560     500     485     568       Calcium     ppm     ASTM D5185m     1510     1570     1296     1473       Phosphorus     ppm     ASTM D5185m     780     670     707     735       Zinc     ppm     ASTM D5185m     870     980     896     978       Sulfur     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >20     3     5     <1	Barium	ppm	ASTM D5185m	5	2	0	0
Magnesium     ppm     ASTM D5185m     560     500     485     568       Calcium     ppm     ASTM D5185m     1510     1570     1296     1473       Phosphorus     ppm     ASTM D5185m     780     670     707     735       Zinc     ppm     ASTM D5185m     870     980     896     978       Sulfur     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >20     3     5     <1	Molybdenum	ppm	ASTM D5185m	50	57	49	53
Calcium     ppm     ASTM D5185m     1510     1570     1296     1473       Phosphorus     ppm     ASTM D5185m     780     670     707     735       Zinc     ppm     ASTM D5185m     780     670     707     735       Zinc     ppm     ASTM D5185m     870     980     896     978       Sulfur     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >+20     3     5     <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus     ppm     ASTM D5185m     780     670     707     735       Zinc     ppm     ASTM D5185m     870     980     896     978       Sulfur     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >+20     3     5     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Magnesium	ppm	ASTM D5185m	560	500	485	568
Zinc     ppm     ASTM D5185m     870     980     896     978       Sulfur     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >20     3     5     <1	Calcium	ppm	ASTM D5185m	1510	1570	1296	1473
Sulfur     ppm     ASTM D5185m     2040     2492     2268     2739       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >+100     3     4     5       Potassium     ppm     ASTM D5185m     >20     3     5     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Phosphorus	ppm	ASTM D5185m	780	670	707	735
CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     >+100     3     4     5       Potassium     ppm     ASTM D5185m     >20     3     5     <1	Zinc	ppm	ASTM D5185m	870	980	896	978
Silicon     ppm     ASTM D5185m     >+100     3     4     5       Sodium     ppm     ASTM D5185m     5     27     8       Potassium     ppm     ASTM D5185m     >20     3     5     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Sulfur	ppm	ASTM D5185m	2040	2492	2268	2739
Sodium     ppm     ASTM D5185m     5     27     8       Potassium     ppm     ASTM D5185m     >20     3     5     <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     3     5     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Silicon	ppm	ASTM D5185m	>+100	3	4	5
Potassium     ppm     ASTM D5185m     >20     3     5     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Sodium	ppm	ASTM D5185m		5	27	8
Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Potassium	ppm	ASTM D5185m	>20	3	5	<1
Nitration     Abs/cm     *ASTM D7624     >20     11.0     10.1     11.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Soot %	%	*ASTM D7844		0	0.1	0.1
Sulfation     Abs/.1mm     *ASTM D7415     >30     22.9     19.2     21.0	Nitration	Abs/cm	*ASTM D7624	>20	11.0	10.1	11.1
FLUID DEGRADATION method limit/base current history1 history2							
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Oxidation Abs/.1mm *ASTM D7414 >25 20.5 16.3 17.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.5	16.3	17.8
Base Number (BN) mg KOH/g ASTM D2896 10.2 4.3 6.3 5.5							



# **OIL ANALYSIS REPORT**





Mar17/22

Jan 6/22

/av26/22

				VISUAL		method	limit/base	current	history1	history2
		1		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		1		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		1		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	1			Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	1			Debris	scalar	*Visual	NONE	NONE	NONE	NONE
			_	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
77/0 Bm	Feb3/23 -	5/23		Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
- Rac	Feb	Mav25/23		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	14.8	14.5	14.6
				GRAPHS						
				Ferrous Alloys						
1	23	-		iron	$ \land $					
375 B B	Feb3/23			nickel						
L,						$\searrow$				
			bpm							
			hale	6						
				4						
				2						
	-			0		State of the local division of the local div	No. of Concession, Name			
				2 2 2						
				/14/ 31/	17/2	26/22 15/22 b3/23	25/23 -			
				May14/21 Juf7/21 Aug31/21 Oct20/21	Jan6/22 Mar17/22	May26/22 - Aug15/22 - Feb3/23 -	May25/23 -			
4			4	🔺 Non-ferrous Meta		May26/22 Aug15/22 Feb3/23	May25/23 -			
7.7./c B	eb3/23		i			May26/22 Aug15/22 Feb3/23	May25/23			
37/c - Roc	Feb3/23		(	Non-ferrous Meta		May26/22 Aug15/22 Feb3/23	May25/23			
377/01 Rec	Feb3/23	-	1	Non-ferrous Meta		May26/22 Aug15/22 Feb3/23	May25/23			
77/C Row	Feb3/23		6	Non-ferrous Metal		May26/22 Aug15/22 Feb3/23	Ma/25/23			
	Feb 3/23	-	1	Non-ferrous Metal		May26/22 Aug15/22	Ma/25/23			
777/C   Base	Feb3/23	_	udd	Non-ferrous Metal		May26/22 Aug15/22	Ma/25/23			
77/r - Bmu	Feb3/23	-	udd	Non-ferrous Metal		May26/22 Aug15/22	May(25/23			
77 /n i Brow	Feb3/23	-	udd	Non-ferrous Metal		May26/22 Aug15/22 Feb3/23	May(25/23			
11/2 BBC	Feb3/23	-	udd	Non-ferrous Metal	ls		2			
777 /n   Bmu	Feb3/23	-	udd	Non-ferrous Metal	ls		2			
77/C APA	Feb3/23	-	udd	Non-ferrous Metal	Jan6.22		2	Raco Number		
77./o 800	Feb.3/23 +	-	udd :	Non-ferrous Metal	Jan6.22		2	Base Number		
77/0 Bmu	Feb3/23 +	-	udd :	Non-ferrous Metal	Jan6.22		2 E2/52/eW 12.0			
77/n Box	Feb3/23 +		u dd	Non-ferrous Metal	Jan6.22		2 CZ/SZ/EW 12.0	Base		
7.77/n I Bruz	Feb3/23		u dd	Non-ferrous Metal	Jan6.22		2 CZ/SZ/EW 12.0	Base		
77/c Ano	Feb3/23	-	u dd	Non-ferrous Metal	Jan6.22		2 CZ/SZ/EW 12.0	Base		
77//= 200L	Feb 3/23	-	uid dd	Non-ferrous Metal	Jan6.22		2 CZ/SZ/EW 12.0	Base		
777/n Bav	Feb3(23	-	cSt (100°C)	Non-ferrous Metal	Jan6.22		2 E2/52/eW 12.0 (0)H0X 8.0 10.0 (0)H0X 8.0 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Base		
77/0 Rmu	Feb3(23 +	-	cSt (100°C)	Non-ferrous Metal	Jan6.22		2 CZ/SZ/EW 12.0	Base		
177/n Brow	Feb3/23		cSt (100°C)	Non-ferrous Metal	ls	May26/22 8 Aug15/22 Feb323	2 EC2527/eW 12.0 (D)HOJ CM 12.0 (D)HOJ CM 12.0 10.0	Base		
777/6 i Rou	Feb3/23		cSt (100°C)	Non-ferrous Metal	Jan6.22		2 EC2552/EW 12.0 ())HO() 8.0 10.0 ())HO() 8.0 10.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base	Oct2021	Aug15/22 +



Mav14/21

ug31/21

Unique Number : 10492254 Diagnostician : Don Baldridge Test Package : FLEET Contact: JEFF COOPERSMITH Certificate L2367 JCOOPERSMITH@GFLENV.COM To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - 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)

Recieved

Diagnosed

: 26 May 2023

: 30 May 2023

Sample No.

Lab Number

: GFL0058500

: 05857789

1378 South Volusia Ave

Orange City, FL

T: (386)503-8468

US 32763

F:

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