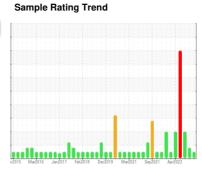


# **OIL ANALYSIS REPORT**

(YA145296) 10420C

Natural Gas Engine

# PETRO CANADA DURON GEO LD 15W40 (30 GAL)





## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

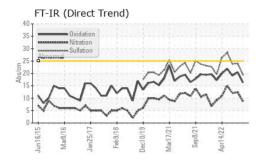
## **Fluid Condition**

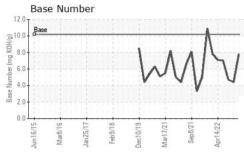
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

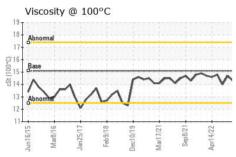
SAMPLE INFORMATION   method   limit/base   current   history1   history2	30 GAL)		112013 Wall20	16 Janz017 Pe02010	Decapita Marabat Sepapati /	quevee	
Sample Date         Client Info         20 Jun 2024         09 Aug 2023         22 Feb 2023           Machine Age         hrs         Client Info         97036         6225         5519           Oil Age         hrs         Client Info         97036         728         1243           Oil Changed         Client Info         N/A         Changed         Changed           Sample Status         NoRMAL         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/bass         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/bass         current         history1         history2           Iron         ppm         ASTM D5185m         >50         7         17         17           Chromium         ppm         ASTM D5185m         >50         7         17         17           Iron         ppm         ASTM D5185m         >20         0         0         0           Iron         ppm         ASTM D5185m         >30         0         0         0           Alluminum         ppm         ASTM D5185m	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date         Client Info         20 Jun 2024         09 Aug 2023         22 Feb 2023           Machine Age         hrs         Client Info         97036         6225         5519           Oil Age         hrs         Client Info         97036         728         1243           Oil Changed         Client Info         N/A         Changed         Changed           Sample Status         NoRMAL         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/bass         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/bass         current         history1         history2           Iron         ppm         ASTM D5185m         >50         7         17         17           Chromium         ppm         ASTM D5185m         >50         7         17         17           Iron         ppm         ASTM D5185m         >20         0         0         0           Iron         ppm         ASTM D5185m         >30         0         0         0           Alluminum         ppm         ASTM D5185m	Sample Number		Client Info		GFL0123385	GFL0082464	GFL0050744
Machine Age         hrs         Client Info         97036         6225         5519           Oil Age         hrs         Client Info         97036         728         1243           Oil Changed         Client Info         N/A         Changed         Changed Changed           Sample Status         method         Imitity         NoRMAL         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         7         17         17           Chromium         ppm         ASTM D5185m         >4         <1         <1         <1           Nikkel         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >9         1         2         2           Lead         ppm         ASTM D5185m         >30         <1         2         <1      C			Client Info		20 Jun 2024	09 Aug 2023	22 Feb 2023
Oil Age         hrs         Client Info         97036         728         1243           Oil Changed Sample Status         Client Info         N/A         Changed Changed Changed Changed ABNORMAL         Changed ABNORMAL         Changed ABNORMAL         Changed ABNORMAL         <	Machine Age	hrs	Client Info		97036	_	5519
Oil Changed Sample Status         Client Info         N/A         Changed ABNORMAL ABNO	Oil Age	hrs	Client Info		97036	728	1243
NORMAL   ABNORMAL   ABNORMAL   CONTAMINATION   method   limit/base   current   history1   history2	-		Client Info		N/A	Changed	Changed
Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         7         17         17           Chromium         ppm         ASTM D5185m         >4         <1					NORMAL		
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         7         17         17           Chromium         ppm         ASTM D5185m         >4         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >9         1         2         2           Lead         ppm         ASTM D5185m         >9         1         2         2           Copper         ppm         ASTM D5185m         >9         1         2         <1           Copper         ppm         ASTM D5185m         >4         0         <1         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         50         21         4         9           Barium         ppm         ASTM D5185m         50         21         4	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >4         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	7	17	17
Titanium         ppm         ASTM D5185m         <1	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >9         1         2         2           Lead         ppm         ASTM D5185m         >30         <1	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum         ppm         ASTM D5185m         >9         1         2         2           Lead         ppm         ASTM D5185m         >30         <1	Titanium	ppm	ASTM D5185m		<1	<1	0
Aluminum         ppm         ASTM D5185m         >9         1         2         2           Lead         ppm         ASTM D5185m         >30         <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Lead         ppm         ASTM D5185m         >30         <1	Aluminum		ASTM D5185m	>9	1	2	2
Copper         ppm         ASTM D5185m         >35         4         ▲ 84         ▲ 41           Tin         ppm         ASTM D5185m         >4         0         <1         <1           Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         21         4         9           Barium         ppm         ASTM D5185m         50         0         0         0           Molybdenum         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         50         49         57         54           Magnesium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         780         853         702         661	Lead	ppm	ASTM D5185m	>30	<1	2	<1
Vanadium         ppm         ASTM D5185m         <1	Copper	ppm	ASTM D5185m	>35	4	<u></u> 84	<u></u> 41
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         21         4         9           Barium         ppm         ASTM D5185m         50         49         57         54           Molybdenum         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         50         49         57         54           Manganesium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon </th <th>Tin</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;4</th> <th>0</th> <th>&lt;1</th> <th>&lt;1</th>	Tin	ppm	ASTM D5185m	>4	0	<1	<1
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         21         4         9           Barium         ppm         ASTM D5185m         5         0         0         0           Molybdenum         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         50         49         57         54           Magnesium         ppm         ASTM D5185m         50         60         600         607         510           Calcium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         70         1050         1046         900           Sulfur         ppm         ASTM D5185m         >+100         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron         ppm         ASTM D5185m         50         21         4         9           Barium         ppm         ASTM D5185m         5         0         0         0           Molybdenum         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         50         600         600         607         510           Calcium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         870         1050         1046         900           Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         5         0         0         0           Molybdenum         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         1510         1672         1837         1698           Phosphorus         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         870         1050         1046         900           Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         5         25         120           Potassium         ppm         ASTM D5185m         20 <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         50         49         57         54           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	50	21	4	9
Manganese         ppm         ASTM D5185m         0         <1	Barium	ppm	ASTM D5185m	5	0	0	0
Magnesium         ppm         ASTM D5185m         560         600         607         510           Calcium         ppm         ASTM D5185m         1510         1672         1837         1698           Phosphorus         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         870         1050         1046         900           Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         5         25         ▲ 120           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         % *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7415         >30         19.5         24.0 </th <th>Molybdenum</th> <th>ppm</th> <th>ASTM D5185m</th> <th>50</th> <th>49</th> <th>57</th> <th>54</th>	Molybdenum	ppm	ASTM D5185m	50	49	57	54
Calcium         ppm         ASTM D5185m         1510         1672         1837         1698           Phosphorus         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         870         1050         1046         900           Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         5         25         ▲ 120           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         780         853         702         661           Zinc         ppm         ASTM D5185m         870         1050         1046         900           Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         5         25         ▲ 120           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method         limit/base	Magnesium	ppm	ASTM D5185m	560	600	607	510
Zinc         ppm         ASTM D5185m         870         1050         1046         900           Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         >5         25         120           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414	Calcium	ppm	ASTM D5185m	1510	1672	1837	1698
Sulfur         ppm         ASTM D5185m         2040         3029         2889         2421           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         >>20         4         4         <1           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         20.5         19.1	Phosphorus	ppm	ASTM D5185m	780	853	702	661
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         5         25         ▲ 120           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         20.5         19.1	Zinc	ppm	ASTM D5185m	870	1050	1046	900
Silicon         ppm         ASTM D5185m         >+100         3         4         7           Sodium         ppm         ASTM D5185m         5         25         ▲ 120           Potassium         ppm         ASTM D5185m         >20         4         4         <1	Sulfur	ppm	ASTM D5185m	2040	3029	2889	2421
Sodium         ppm         ASTM D5185m         5         25         ▲ 120           Potassium         ppm         ASTM D5185m         >20         4         4         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         20.5         19.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         4         4         <1	Silicon	ppm	ASTM D5185m	>+100	3	4	7
INFRA-RED	Sodium	ppm	ASTM D5185m		5	25	<u>120</u>
Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         20.5         19.1	Potassium	ppm	ASTM D5185m	>20	4	4	<1
Nitration         Abs/cm         *ASTM D7624         >20         8.7         12.4         12.0           Sulfation         Abs/.1mm         *ASTM D7615         >30         19.5         24.0         23.8           FLUID DEGRADATION method limit/base current         bistory1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         20.5         19.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         24.0         23.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.3         20.5         19.1	Soot %	%	*ASTM D7844		0	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 16.3 20.5 19.1	Nitration	Abs/cm	*ASTM D7624	>20	8.7	12.4	12.0
Oxidation Abs/.1mm *ASTM D7414 >25 <b>16.3</b> 20.5 19.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.5	24.0	23.8
	FLUID DEGRAI	NOITAC	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 <b>7.8</b> 4.4 4.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.3	20.5	19.1
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	7.8	4.4	4.7



# **OIL ANALYSIS REPORT**



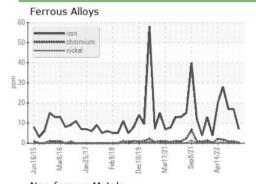


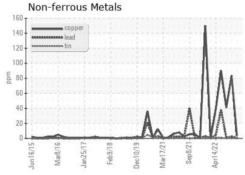


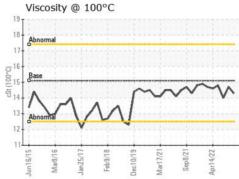
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	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

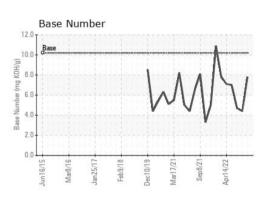
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.1	14.3	14.7	14.0	

### **GRAPHS**













Certificate 12367

Laboratory Sample No. Lab Number : 06223339

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0123385

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Unique Number : 11101536

Received : 28 Jun 2024 **Tested** : 01 Jul 2024 Diagnosed

: 01 Jul 2024 - Wes Davis

GFL Environmental - 007 - Brunswick

2809 Galloway Road Bolivia, NC

US 28422 Contact: DONALD CRAVEN

dcraven@gflenv.com T:

\* - 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)

F: (910)253-4179