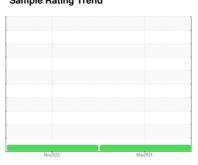


# **OIL ANALYSIS REPORT**

Sample Rating Trend







Machine Id 946003

Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (

## 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 oil.

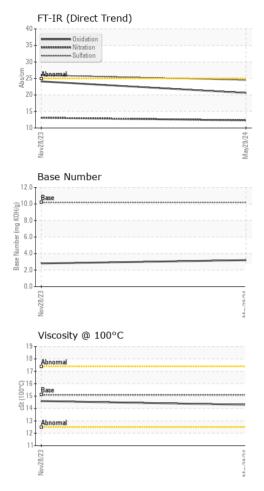
## **Fluid Condition**

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

SAMPLE INFORMATION   method   limit/base   current   history1   history2	( GAL)			Nov2023	May2024		
Sample Date   Client Info   29 May 2024   28 Nov 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         4890         3949	Sample Number		Client Info		GFL0113972	GFL0080367	
Oil Age         hrs         Client Info         941         3949	Sample Date		Client Info		29 May 2024	28 Nov 2023	
Oil Changed Sample Status         Client Info MoRMAL         Changed NORMAL         Changed NORMAL	Machine Age	hrs	Client Info		4890	3949	
NORMAL   N	Oil Age	hrs	Client Info		941	3949	
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG	Oil Changed		Client Info		Changed	Changed	
Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         16         18            Chromium         ppm         ASTM D5185m         >4         2         2         2            Nickel         ppm         ASTM D5185m         >2         <1         <1            Titanium         ppm         ASTM D5185m         >3         0         0            Aluminum         ppm         ASTM D5185m         >30         <1         2            Aluminum         ppm         ASTM D5185m         >30         <1         2            Lead         ppm         ASTM D5185m         >30         <1         2            Copper         ppm         ASTM D5185m         >30         <1         2            Lead         ppm         ASTM D5185m         >30         <1         1            Copper         ppm         ASTM D5185m         >4         <1	Sample Status				NORMAL	NORMAL	
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         16         18	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron	Water		WC Method	>0.1	NEG	NEG	
Chromium         ppm         ASTM D5185m         >4         2         2            Nickel         ppm         ASTM D5185m         >2         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	16	18	
Titanium         ppm         ASTM D5185m         <1         <1            Silver         ppm         ASTM D5185m         >3         0         0            Aluminum         ppm         ASTM D5185m         >9         2         2            Lead         ppm         ASTM D5185m         >35         2         3            Tin         ppm         ASTM D5185m         >4         <1	Chromium	ppm	ASTM D5185m	>4	2	2	
Silver         ppm         ASTM D5185m         >3         0         0            Aluminum         ppm         ASTM D5185m         >9         2         2            Lead         ppm         ASTM D5185m         >30         <1         2            Copper         ppm         ASTM D5185m         >4         <1         1            Tin         ppm         ASTM D5185m         >4         <1         1            Vanadium         ppm         ASTM D5185m         >4         <1         0            Vanadium         ppm         ASTM D5185m         0         <1         0            ADDITIVES         method         limit/base         current         history1         history2           ADDITIVES         method         limit/base         current         history1	Nickel	ppm	ASTM D5185m	>2	<1	<1	
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	
Lead	Silver	ppm	ASTM D5185m	>3	0	0	
Copper         ppm         ASTM D5185m         >35         2         3            Tin         ppm         ASTM D5185m         >4         <1	Aluminum	ppm	ASTM D5185m	>9	2	2	
Tin         ppm         ASTM D5185m         >4         <1         1            Vanadium         ppm         ASTM D5185m         0         <1            Cadmium         ppm         ASTM D5185m         <1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         6         9            Barium         ppm         ASTM D5185m         50         6         9            Molybdenum         ppm         ASTM D5185m         50         53         55            Molybdenum         ppm         ASTM D5185m         50         53         55            Magnesium         ppm         ASTM D5185m         50         569         609            Magnesium         ppm         ASTM D5185m         780         860         766            Phosphorus         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717	Lead	ppm	ASTM D5185m	>30	<1	2	
Tin         ppm         ASTM D5185m         >4         <1         1            Vanadium         ppm         ASTM D5185m         0         <1            Cadmium         ppm         ASTM D5185m         <1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         6         9            Barium         ppm         ASTM D5185m         50         6         9            Molybdenum         ppm         ASTM D5185m         50         53         55            Molybdenum         ppm         ASTM D5185m         50         53         55            Magnesium         ppm         ASTM D5185m         50         569         609            Magnesium         ppm         ASTM D5185m         780         860         766            Phosphorus         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717	Copper	ppm	ASTM D5185m	>35	2	3	
Vanadium         ppm         ASTM D5185m         0         <1            Cadmium         ppm         ASTM D5185m         <1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         6         9            Barium         ppm         ASTM D5185m         50         6         9            Molybdenum         ppm         ASTM D5185m         50         53         55            Manganese         ppm         ASTM D5185m         560         569         609            Magnesium         ppm         ASTM D5185m         560         569         609            Calcium         ppm         ASTM D5185m         780         860         766            Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1	• •				<1	1	
Cadmium         ppm         ASTM D5185m         <1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         6         9            Barium         ppm         ASTM D5185m         50         53         55            Molybdenum         ppm         ASTM D5185m         50         53         55            Manganese         ppm         ASTM D5185m         50         569         609            Magnesium         ppm         ASTM D5185m         660         569         609            Calcium         ppm         ASTM D5185m         780         860         766            Phosphorus         ppm         ASTM D5185m         770         1014         965            Sulfur         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            INFRA-RED	Vanadium		ASTM D5185m		0	<1	
Boron	Cadmium		ASTM D5185m		<1	0	
Barium         ppm         ASTM D5185m         5         0         0            Molybdenum         ppm         ASTM D5185m         50         53         55            Manganese         ppm         ASTM D5185m         0         <1         <1            Magnesium         ppm         ASTM D5185m         560         569         609            Calcium         ppm         ASTM D5185m         1510         1586         1655            Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         50         53         55            Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	50	6	9	
Molybdenum         ppm         ASTM D5185m         50         53         55            Manganese         ppm         ASTM D5185m         0         <1         <1            Magnesium         ppm         ASTM D5185m         560         569         609            Calcium         ppm         ASTM D5185m         1510         1586         1655            Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624	Barium	ppm	ASTM D5185m	5	0	0	
Manganese         ppm         ASTM D5185m         0         <1         <1            Magnesium         ppm         ASTM D5185m         560         569         609            Calcium         ppm         ASTM D5185m         1510         1586         1655            Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %	Molybdenum	ppm	ASTM D5185m	50	53	55	
Magnesium         ppm         ASTM D5185m         560         569         609            Calcium         ppm         ASTM D5185m         1510         1586         1655            Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >+100         10         17            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/:mm         *ASTM D7415	Manganese		ASTM D5185m	0	<1	<1	
Calcium         ppm         ASTM D5185m         1510         1586         1655            Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         12.3         13.1            Nitration         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION	-		ASTM D5185m	560	569	609	
Phosphorus         ppm         ASTM D5185m         780         860         766            Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         "ASTM D7414         >25<	Calcium		ASTM D5185m	1510	1586	1655	
Zinc         ppm         ASTM D5185m         870         1014         965            Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >20         4         11            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/.mm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM	Phosphorus		ASTM D5185m	780	860	766	
Sulfur         ppm         ASTM D5185m         2040         2717         2387            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         >+100         12         19            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1			ASTM D5185m	870	1014	965	
Silicon         ppm         ASTM D5185m         >+100         10         17            Sodium         ppm         ASTM D5185m         12         19            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	Sulfur		ASTM D5185m	2040	2717	2387	
Sodium         ppm         ASTM D5185m         12         19            Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         4         11            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	Silicon	ppm	ASTM D5185m	>+100	10	17	
INFRA-RED	Sodium	ppm	ASTM D5185m		12	19	
Soot %         %         *ASTM D7844         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	Potassium	ppm	ASTM D5185m	>20	4	11	
Nitration         Abs/cm         *ASTM D7624         >20         12.3         13.1            Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	Soot %	%	*ASTM D7844		0.1	0	
Sulfation         Abs/.1mm         *ASTM D7415         >30         24.5         26.0            FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.6         24.1	Nitration	Abs/cm	*ASTM D7624	>20	12.3	13.1	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	24.5		
	FLUID DEGRA	NOITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.6	24.1	
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	3.2	2.8	



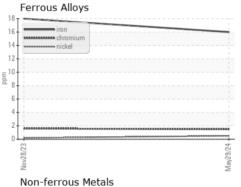
# **OIL ANALYSIS REPORT**

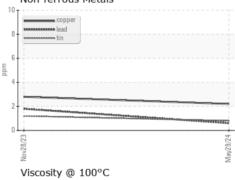


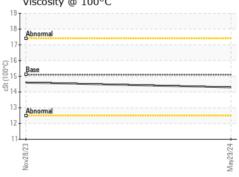
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance	scalar	*Visual	NORML	NORML	NORML	
Odor	scalar	*Visual	NORML	NORML	NORML	
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG	NEG	
Free Water	scalar	*Visual		NEG	NEG	
	DTIEO				111	1

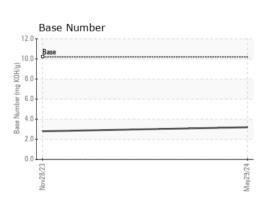
FLUID PROPE	ERITES	method	limit/base		nistory1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	14.3	14.6	

## **GRAPHS**













Sample No.

: GFL0113972 Lab Number : 06197441 Unique Number : 11059564

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 03 Jun 2024 **Tested** 

: 04 Jun 2024 Diagnosed : 04 Jun 2024 - Wes Davis

W144 S6400 College Ct. Muskego, WI US 53150 Contact: Brian Schlomann

GFL Environmental - 932 - Muskego HC

brian.schlomann@gflenv.com

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

T: (262)510-4586

Test Package : FLEET Certificate 12367

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.

Report Id: GFL932 [WUSCAR] 06197441 (Generated: 06/04/2024 11:23:10) Rev: 1

Submitted By: GFL932, GFL414 - BECKY FLETCHER