

# **PROBLEM SUMMARY**

Sample Rating Trend

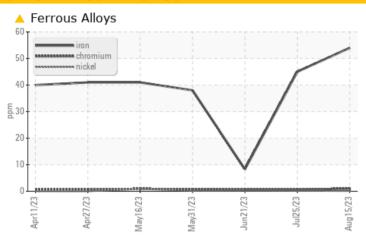
WEAR

Machine Id 933023

Component **Natural Gas Engine** 

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

## **COMPONENT CONDITION SUMMARY**



#### 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.

PROBLEMATION	C TEST	RESULT	S			
Sample Status				ABNORMAL	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>50	<b>4</b> 54	45	8

Customer Id: GFL836 Sample No.: GFL0087202 Lab Number: 05931401 Test Package: FLEET

To manage this report scan the QR code

To discuss the diagnosis or test data:

Don Baldridge +1 don.b505@comcast.net

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

#### **RECOMMENDED ACTIONS**

Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.

#### HISTORICAL DIAGNOSIS

#### 25 Jul 2023 Diag: Jonathan Hester

#### NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



#### 21 Jun 2023 Diag: Jonathan Hester

#### NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

# view report

#### 31 May 2023 Diag: Wes Davis

#### NORMAL



Resample at the next service interval to monitor. Metal levels are typical for a new component breaking in. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





# **OIL ANALYSIS REPORT**

Sample Rating Trend

Agr2023 Apr2023 May2023 May2023 Jun2023 Jul2023 Aug2023

WEAR



Machine Id 933023 Component

**Natural Gas Engine** 

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

#### **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

Cylinder, crank, or cam shaft wear is indicated. All other component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil

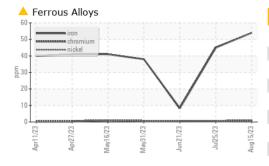
## **Fluid Condition**

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

Sample Date   Client Info   15 Aug 2023   25 Jul 2023   21 Jun 2023   Machine Age   hrs   Client Info   1201   1030   756	GAL)		Apr2023	Apr2023 May2023	May2023 Jun2023 Jul2023	Aug2023	
Sample Date         Client Info         15 Aug 2023         25 Jul 2023         21 Jun 2023           Machine Age         hrs         Client Info         1201         1030         756           Oil Age         hrs         Client Info         1201         0         756           Oil Changed         Client Info         Changed         Not Changd         Not Changd         Not Changd           Sample Status         Method         limit/base         current         history1         Not Changd           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         54         45         8           Chromium         ppm         ASTM D5185m         >4         1         <1	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         1201         1030         756           Oil Age         hrs         Client Info         1201         0         756           Oil Changed         Not Changed         Not Changd         Not Changd         NorMAL         NORMAL           Sample Status         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         \$ 54         45         8           Chromium         ppm         ASTM D5185m         >4         1         <1	Sample Number		Client Info		GFL0087202	GFL0087193	GFL0083794
Oil Age         hrs         Client Info         1201         0         756           Oil Changed         Client Info         Changed         Not Changed         1         4         1         4         1         4         1         4         1         4         1         4         1         4         1         4         1         2         1         4         1	Sample Date		Client Info		15 Aug 2023	25 Jul 2023	21 Jun 2023
Oil Changed Sample Status         Client Info         Changed ABNORMAL ABNORMAL NORMAL NORMAL         Not Changd NORMAL NORMAL NORMAL           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         ♣ 54         45         8           Chromium         ppm         ASTM D5185m         >4         1         <1	Machine Age	hrs	Client Info		1201	1030	756
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         54         45         8           Chromium         ppm         ASTM D5185m         >4         1         <1	Oil Age	hrs	Client Info		1201	0	756
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         ▲ 54         45         8           Chromium         ppm         ASTM D5185m         >4         1         <1	Oil Changed		Client Info		Changed	Not Changd	Not Changd
Iron	Sample Status				ABNORMAL	NORMAL	NORMAL
Chromium         ppm         ASTM D5185m         >4         1         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	<u> </u>	45	8
Titanium	Chromium	ppm	ASTM D5185m	>4	1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >35         14         12         <1           Tin         ppm         ASTM D5185m         >4         2         1         <1	Aluminum	ppm	ASTM D5185m	>9	8	8	1
Copper         ppm         ASTM D5185m         >35         14         12         <1           Tin         ppm         ASTM D5185m         >4         2         1         <1	Lead	ppm	ASTM D5185m	>30	12	8	<1
Tin	Copper		ASTM D5185m	>35	14	12	<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         8         11         23           Barium         ppm         ASTM D5185m         50         0         0         0           Molybdenum         ppm         ASTM D5185m         50         60         55         52           Manganese         ppm         ASTM D5185m         560         870         806         600           Calcium         ppm         ASTM D5185m         560         870         806         600           Calcium         ppm         ASTM D5185m         780         753         669         769           Phosphorus         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         27777         2535         2963           CONTAMINANTS         method         limit/base         current         history1		ppm	ASTM D5185m	>4	2	1	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         8         11         23           Barium         ppm         ASTM D5185m         5         0         0         0           Molybdenum         ppm         ASTM D5185m         50         60         55         52           Manganese         ppm         ASTM D5185m         50         4         3         <1	Vanadium		ASTM D5185m		<1	<1	0
Boron   ppm   ASTM D5185m   50   0   0   0   0   0   0   0   0	Cadmium		ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         5         0         0         0           Molybdenum         ppm         ASTM D5185m         50         60         55         52           Manganese         ppm         ASTM D5185m         0         4         3         <1           Magnesium         ppm         ASTM D5185m         560         870         806         600           Calcium         ppm         ASTM D5185m         1510         1347         1251         1609           Phosphorus         ppm         ASTM D5185m         780         753         669         769           Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         50         60         55         52           Manganese         ppm         ASTM D5185m         0         4         3         <1           Magnesium         ppm         ASTM D5185m         560         870         806         600           Calcium         ppm         ASTM D5185m         1510         1347         1251         1609           Phosphorus         ppm         ASTM D5185m         780         753         669         769           Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Sout %         *ASTM D7824         >20	Boron	ppm	ASTM D5185m	50	8	11	23
Manganese         ppm         ASTM D5185m         0         4         3         <1           Magnesium         ppm         ASTM D5185m         560         870         806         600           Calcium         ppm         ASTM D5185m         1510         1347         1251         1609           Phosphorus         ppm         ASTM D5185m         780         753         669         769           Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D76	Barium	ppm	ASTM D5185m	5	0	0	0
Magnesium         ppm         ASTM D5185m         560         870         806         600           Calcium         ppm         ASTM D5185m         1510         1347         1251         1609           Phosphorus         ppm         ASTM D5185m         780         753         669         769           Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30 </td <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>50</td> <th>60</th> <td>55</td> <td>52</td>	Molybdenum	ppm	ASTM D5185m	50	60	55	52
Calcium         ppm         ASTM D5185m         1510         1347         1251         1609           Phosphorus         ppm         ASTM D5185m         780         753         669         769           Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method	Manganese	ppm	ASTM D5185m	0	4	3	<1
Phosphorus         ppm         ASTM D5185m         780         753         669         769           Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 </td <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>560</td> <th>870</th> <td>806</td> <td>600</td>	Magnesium	ppm	ASTM D5185m	560	870	806	600
Zinc         ppm         ASTM D5185m         870         949         876         989           Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         8         6         5           Potassium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414	Calcium	ppm	ASTM D5185m	1510	1347	1251	1609
Sulfur         ppm         ASTM D5185m         2040         2777         2535         2963           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         8         6         5           Potassium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	Phosphorus	ppm	ASTM D5185m	780	753	669	769
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         8         6         5           Potassium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	Zinc	ppm	ASTM D5185m	870	949	876	989
Silicon         ppm         ASTM D5185m         >+100         92         85         4           Sodium         ppm         ASTM D5185m         8         6         5           Potassium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	Sulfur	ppm	ASTM D5185m	2040	2777	2535	2963
Sodium         ppm         ASTM D5185m         8         6         5           Potassium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         7         8         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	Silicon	ppm	ASTM D5185m	>+100	92	85	4
INFRA-RED	Sodium	ppm	ASTM D5185m		8	6	5
Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	Potassium	ppm	ASTM D5185m	>20	7	8	1
Nitration         Abs/cm         *ASTM D7624         >20         12.7         12.1         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.3         25.1         20.2           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.1         22.5         16.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415 >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         24.1         22.5         16.9	Soot %	%	*ASTM D7844		0	0.1	0.1
Sulfation         Abs/.1mm         *ASTM D7415 >30         26.3         25.1         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         24.1         22.5         16.9	Nitration	Abs/cm	*ASTM D7624	>20	12.7	12.1	9.5
Oxidation	Sulfation			>30			
	FLUID DEGRAI	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	24.1	22.5	16.9
	Base Number (BN)	mg KOH/g			3.2	3.7	7.2



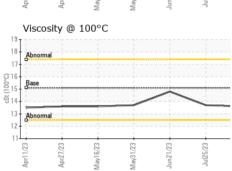
## **OIL ANALYSIS REPORT**

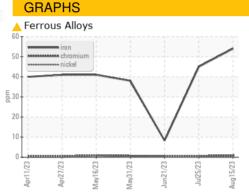


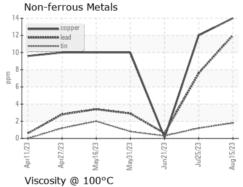
VISUAL		method	limit/base	current	history
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual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

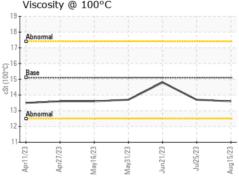
Base				
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.0				\
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Apr11/23 Apr27/23	733	/23	/23	/23

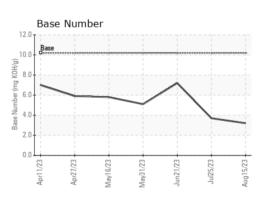
















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: GFL0087202 : 05931401 : 10616672

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 22 Aug 2023 Diagnosed : 24 Aug 2023 Diagnostician : Don Baldridge

GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road Kansas City, MO US 64126 Contact: Robert Hart

rhart@gflenv.com T: (580)461-1509

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)

Report Id: GFL836 [WUSCAR] 05931401 (Generated: 08/24/2023 10:38:26) Rev: 1

Contact/Location: See also GFL823, 834, 837, 840 - Robert Hart - GFL836

history2

NONE NONE

NONE

NONE

NONE

NONE

NORML

NORML NEG NEG