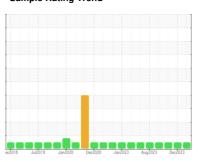


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



927074-260325

Component

**Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- GAL)

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil

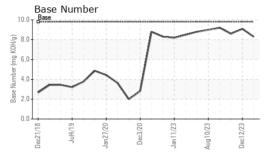
### **Fluid Condition**

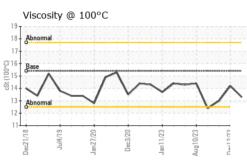
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   imit/base   current   history1   history2	ec2018 Jui2019 Jan2020 Dec2020 Jan2023 Aug/2023 Dec2023						
Sample Date	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         18357         18174         18001           Oil Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         Changed           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL         NORMAL           Fuel         WC Method         >5         <1.0	Sample Number		Client Info		GFL0102439	GFL0102507	GFL0093715
Oil Age         hrs         Client Info         N/A         N/A         N/A         Changed           Sample Status         Client Info         N/A         N/A         N/A         Changed           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0	Sample Date		Client Info		05 Jan 2024	12 Dec 2023	24 Oct 2023
Oil Changed Sample Status         Client Info         N/A         N/A         N/A         Changed NORMAL         NORMAL </td <td>Machine Age</td> <td>hrs</td> <td>Client Info</td> <td></td> <th>18357</th> <td>18174</td> <td>18001</td>	Machine Age	hrs	Client Info		18357	18174	18001
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2	Oil Age	hrs	Client Info		0	0	0
Fuel	Oil Changed		Client Info		N/A	N/A	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imitibase         current         history1         history2           WEAR METALS         method         limitibase         current         history1         history2           Iron         ppm         ASTM D5185m         >100         25         16         15           Chromium         ppm         ASTM D5185m         >20         1         <1	CONTAMINA	TION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >4         0         <1	WEAR METAI	LS	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	25	16	15
Titanium	Chromium	ppm	ASTM D5185m	>20	1	<1	1
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Aluminum         ppm         ASTM D5185m         >20         4         4         6           Lead         ppm         ASTM D5185m         >40         <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead         ppm         ASTM D5185m         >40         <1         0         <1           Copper         ppm         ASTM D5185m         >330         <1         <1         <1           Tin         ppm         ASTM D5185m         >15         <1         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         5         5           Barium         ppm         ASTM D5185m         0         0         <1         0           Molybdenum         ppm         ASTM D5185m         0         5         5         5           Barium         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Calcium         ppm         ASTM D5185m         1070         1019         1101	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >330         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Aluminum	ppm	ASTM D5185m	>20	4	4	6
Tin	Lead	ppm	ASTM D5185m	>40	<1	0	<1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         5         5           Barium         ppm         ASTM D5185m         0         0         <1         0           Molybdenum         ppm         ASTM D5185m         60         58         61         63           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         926         968         914           Calcium         ppm         ASTM D5185m         1070         1019         1101         1130           Phosphorus         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1	Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         5         5           Barium         ppm         ASTM D5185m         0         0         <1	Tin	ppm	ASTM D5185m	>15	<1	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium         ppm         ASTM D5185m         0         0         <1         0           Molybdenum         ppm         ASTM D5185m         60         58         61         63           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         58         61         63           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         926         968         914           Calcium         ppm         ASTM D5185m         1070         1019         1101         1130           Phosphorus         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         225         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         30         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>5</th> <td>5</td> <td>5</td>	Boron	ppm	ASTM D5185m	0	5	5	5
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         926         968         914           Calcium         ppm         ASTM D5185m         1070         1019         1101         1130           Phosphorus         ppm         ASTM D5185m         1150         1087         1151         1086           Zinc         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7815	Barium	ppm	ASTM D5185m	0	0	<1	0
Magnesium         ppm         ASTM D5185m         1010         926         968         914           Calcium         ppm         ASTM D5185m         1070         1019         1101         1130           Phosphorus         ppm         ASTM D5185m         1150         1087         1151         1086           Zinc         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	58	61	63
Calcium         ppm         ASTM D5185m         1070         1019         1101         1130           Phosphorus         ppm         ASTM D5185m         1150         1087         1151         1086           Zinc         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION         *ASTM D7414	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus         ppm         ASTM D5185m         1150         1087         1151         1086           Zinc         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION         *ASTM D7414	Magnesium	ppm	ASTM D5185m	1010	926	968	914
Zinc         ppm         ASTM D5185m         1270         1257         1321         1255           Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         >20         3         3         2           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	Calcium	ppm	ASTM D5185m	1070	1019	1101	1130
Sulfur         ppm         ASTM D5185m         2060         2983         3196         3550           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Phosphorus	ppm		1150	1087	1151	1086
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Zinc	ppm	ASTM D5185m	1270	1257	1321	1255
Silicon         ppm         ASTM D5185m         >25         6         8         6           Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Sulfur	ppm	ASTM D5185m	2060	2983	3196	3550
Sodium         ppm         ASTM D5185m         39         29         6           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Silicon	ppm	ASTM D5185m	>25	6	8	6
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Sodium	ppm	ASTM D5185m		39	29	6
Soot %         %         *ASTM D7844         >3         0.9         0.8         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Potassium	ppm	ASTM D5185m	>20	3	3	2
Nitration         Abs/cm         *ASTM D7624         >20         9.8         8.2         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.9         20.5         20.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         15.5         15.7	Soot %	%	*ASTM D7844	>3	0.9	8.0	0.6
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 17.0 15.5 15.7	Nitration	Abs/cm	*ASTM D7624	>20	9.8	8.2	7.9
Oxidation Abs/.1mm *ASTM D7414 >25 <b>17.0</b> 15.5 15.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.9	20.5	20.0
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.3         9.1         8.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.0	15.5	15.7
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.3	9.1	8.6



## **OIL ANALYSIS REPORT**

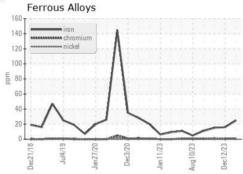


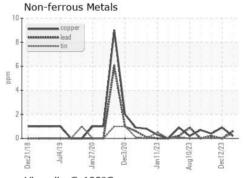


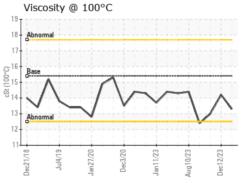
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

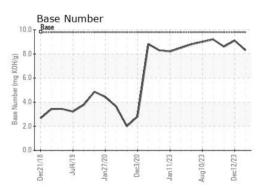
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	14.2	13.0	

### **GRAPHS**













Certificate L2367

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

: GFL0102439 : 06063411 : 10834793

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 17 Jan 2024 Diagnosed : 18 Jan 2024 Diagnostician : Wes Davis

GFL Environmental - 837 - Harrison TS 22820 S State Route 291

Harrisonville, MO US 64701

Contact: BRYAN SWANSON bryanswanson@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)

Report Id: GFL837 [WUSCAR] 06063411 (Generated: 01/19/2024 14:31:13) Rev: 1

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