

# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id 10588 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.

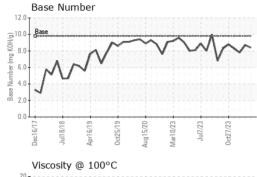
### **Fluid Condition**

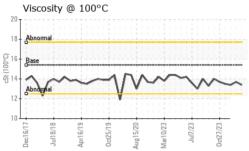
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   imitibase   current   history1   history2	CAL)  2017 Ju2018 Ap;2019 Oct019 Aug/2020 Maz/023 Ju2023 Oct2023												
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2						
Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         Changed           Sample Status         Client Info         N/A         N/A         N/A         NAA         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history         history2           Fuel         WC Method         >5         <1.0	<th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0103472</th> <th>GFL0103493</th> <th>GFL0103479</th>						Sample Number		Client Info		GFL0103472	GFL0103493	GFL0103479
Oil Age         hrs         Client Info         N/A         N/A         N/A         Changed           Sample Status         Client Info         N/A         N/A         N/A         Changed           Sample Status         Contamily         NoRMAL         NORMAL </td <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>15 Jan 2024</th> <td>26 Dec 2023</td> <td>27 Nov 2023</td>	Sample Date		Client Info		15 Jan 2024	26 Dec 2023	27 Nov 2023						
Oil Changed Sample Status         Client Info MoRMAL         N/A NORMAL         N/A NORMAL         Changed NORMAL NORMAL         Changed NORMAL NORMAL         Changed NORMAL NORMAL         Changed NORMAL NORMAL         Changed NORMAL NORMAL         NORMAL NORMAL         Changed NORMAL NORMAL         NORMAL NORMAL         NORMAL NORM	Machine Age	hrs	Client Info		17614	17488	17348						
Sample Status	Oil Age	hrs	Client Info		0	0	0						
CONTAMINATION	Oil Changed		Client Info		N/A	N/A	Changed						
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         NEG         AET         NED         NED	Sample Status				NORMAL	NORMAL	NORMAL						
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         9         3         16           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         0         <1         0           Silver         ppm         ASTM D5185m         >4         0         <1         0           Silver         ppm         ASTM D5185m         >40         <1         0         0           Aluminum         ppm         ASTM D5185m         >20         1         2         2           Lead         ppm         ASTM D5185m         >40         <1         0         0           Copper         ppm         ASTM D5185m         >330         <1         0         <1         0           Vanadium         ppm         ASTM D5185m         >15         <1         <1         0         0           Cadmium         ppm         ASTM D5185m         0 <th>CONTAMINAT</th> <th>ION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	CONTAMINAT	ION	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 METAL	.S	method	limit/base	current	history1	history2						
Nickel	Iron	ppm	ASTM D5185m	>100	9	3	16						
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1						
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	0						
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	0						
Lead         ppm         ASTM D5185m         >40         <1         0         0           Copper         ppm         ASTM D5185m         >330         <1         0         <1           Tin         ppm         ASTM D5185m         >15         <1         <1         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         6         6         1           Barium         ppm         ASTM D5185m         0         0         0         2           Molybdenum         ppm         ASTM D5185m         0         61         60         62           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Calcium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1270         1177         1211	Silver	ppm	ASTM D5185m	>3	0	0	0						
Copper         ppm         ASTM D5185m         >330         <1         0         <1           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	1	2	2						
Tin         ppm         ASTM D5185m         >15         <1         <1         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         6         6         1           Barium         ppm         ASTM D5185m         0         0         0         2           Molybdenum         ppm         ASTM D5185m         0         60         61         60         62           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current	Lead	ppm	ASTM D5185m	>40	<1	0	0						
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         6         6         6         1           Barium         ppm         ASTM D5185m         0         0         0         2           Molybdenum         ppm         ASTM D5185m         0         61         60         62           Magnesium         ppm         ASTM D5185m         1010         870         880         860           Calcium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfacion         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         curr	Copper	ppm	ASTM D5185m	>330	<1	0	<1						
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         6         6         1           Barium         ppm         ASTM D5185m         0         0         0         2           Molybdenum         ppm         ASTM D5185m         0         61         60         62           Manganese         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	<1	<1							
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0						
Boron         ppm         ASTM D5185m         0         6         6         1           Barium         ppm         ASTM D5185m         0         0         0         2           Molybdenum         ppm         ASTM D5185m         60         61         60         62           Manganese         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		0	0	0						
Barium         ppm         ASTM D5185m         0         0         0         2           Molybdenum         ppm         ASTM D5185m         60         61         60         62           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2						
Molybdenum         ppm         ASTM D5185m         60         61         60         62           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         870         880         860           Calcium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base	Boron	ppm											
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         870         880         860           Calcium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         % STM D7844         >3         0.		ppm	ASTM D5185m		-								
Magnesium         ppm         ASTM D5185m         1010         870         880         860           Calcium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D74		ppm				60							
Calcium         ppm         ASTM D5185m         1070         1041         945         995           Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION	-	ppm	ASTM D5185m										
Phosphorus         ppm         ASTM D5185m         1150         980         1028         934           Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.9         6.0         8.5           Nitration         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm <td< td=""><td>Magnesium</td><td>ppm</td><td></td><td></td><th></th><td></td><td></td></td<>	Magnesium	ppm											
Zinc         ppm         ASTM D5185m         1270         1177         1211         1121           Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.9         6.0         8.5           Nitration         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4		ppm											
Sulfur         ppm         ASTM D5185m         2060         2820         3044         2872           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         >20         1         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4													
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         4         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4													
Silicon         ppm         ASTM D5185m         >25         4         2         5           Sodium         ppm         ASTM D5185m         4         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4			ASTM D5185m	2060	2820	3044	2872						
Sodium         ppm         ASTM D5185m         4         3         3           Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4	CONTAMINAN	ITS	method	limit/base	current	history1	history2						
Potassium         ppm         ASTM D5185m         >20         1         3         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4				>25	4								
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4		ppm			4	3							
Soot %         %         *ASTM D7844 >3         0.3         0.2         0.5           Nitration         Abs/cm         *ASTM D7624 >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.6         13.3         15.4	Potassium	ppm	ASTM D5185m	>20	1	3	3						
Nitration         Abs/cm         *ASTM D7624         >20         6.9         6.0         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         17.8         18.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.3         15.4	INFRA-RED		method	limit/base	current	history1	history2						
Sulfation         Abs/.1mm         *ASTM D7415 >30         17.8         17.8         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.6         13.3         15.4	Soot %	%	*ASTM D7844	>3	0.3		0.5						
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2513.613.315.4	Nitration	Abs/cm	*ASTM D7624	>20	6.9	6.0	8.5						
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.8	17.8	18.6						
	FLUID DEGRAI	NOITAC	method	limit/base	current	history1	history2						
<b>Base Number (BN)</b> mg KOH/g ASTM D2896 9.8 <b>8.4</b> 8.7 7.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.6	13.3	15.4						
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	8.7	7.8						



## **OIL ANALYSIS REPORT**

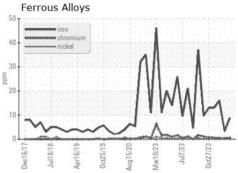


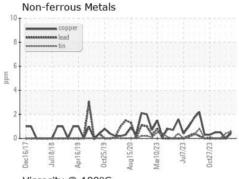


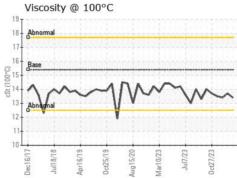
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

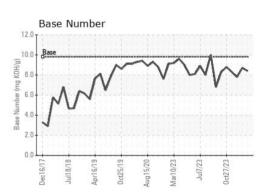
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.7	13.4	

### **GRAPHS**













Certificate L2367

Laboratory Sample No.

Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0103472 : 06071370 : 10848047

Recieved : 26 Jan 2024 Diagnosed Diagnostician : Wes Davis

: 26 Jan 2024

GFL Environmental - 868 - Childersburg Fines Hauling (Alpine) 13737 Plant Rd

Childersburg, AL US 35044

Contact: JONATHAN WILLIAMS jonathan.williams@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)

T:

F: