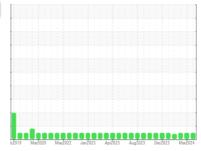


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id **726036-310024** 

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.

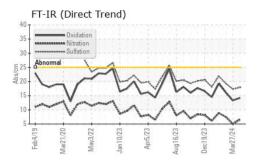
### **Fluid Condition**

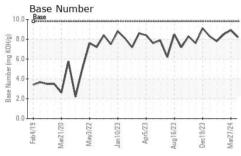
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

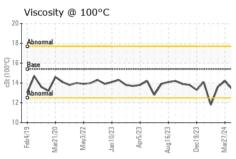
SAMPLE INFORMATION   method   limit/base   current   history1   history2	āAL)		b2019 Mar2	020 May2022 Jan202	3 Apr2023 Aug2023 Dec202	3 Mar2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0117157	GFL0114073	GFL0114031
Machine Age         hrs         Client Info         0         600         600         600           Oil Age         hrs         Client Info         0         600         600         600           Oil Changed         Client Info         Not Changed         Changed         Changed         Changed           Sample Status         WC Method         5         <1.0			Client Info		23 Apr 2024	27 Mar 2024	15 Mar 2024
Oil Age         hrs         Client Info         Not Changed Changed Changed Changed Changed Changed Sample Status         Collect Info         NoRMAL         NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL         NORMAL         NORMAL         NORMAL NORMAL         NORDA         ALL         1         1 <td>•</td> <td>hrs</td> <td></td> <td></td> <th>-</th> <td>16488</td> <td>16417</td>	•	hrs			-	16488	16417
Oil Changed Sample Status         Client Info         Not Changed NORMAL         Changed NORMAL         Changed NORMAL         Changed NORMAL         Changed NORMAL         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	•	hrs	Client Info		0	600	600
Sample Status			Client Info		Not Changd	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >110         7         4         13           Chromium         ppm         ASTM D5185m         >4         1         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Second   WC Method   NEG   NEG   NEG   WEAR METALS   method   limit/base   current   history1   history2	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         >4         1         <1         0           Nickel         ppm         ASTM D5185m         >2         1         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>110	7	4	13
Titanium         ppm         ASTM D5185m         <1         <1         0           Silver         ppm         ASTM D5185m         >2         <1	Chromium	ppm	ASTM D5185m	>4	1	<1	0
Silver	Nickel	ppm	ASTM D5185m	>2	1	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	0
Lead         ppm         ASTM D5185m         >45         1         <1         0           Copper         ppm         ASTM D5185m         >85         1         <1         0           Tin         ppm         ASTM D5185m         >4         1         <1         0           Vanadium         ppm         ASTM D5185m         <1         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         8         4           ADDITIVES         method         limit/base         current         history1         history2           Barium         ppm         ASTM D5185m         0         -1         0         0           Barium         ppm         ASTM D5185m         0         -1         <1         0         0           Barium         ppm         ASTM D5185m         0         1         <1         0         0           Magnesium         ppm         ASTM D5185m         1070         15	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper         ppm         ASTM D5185m         >85         1         <1         0           Tin         ppm         ASTM D5185m         >4         1         <1	Aluminum	ppm	ASTM D5185m	>25	3	2	<1
Tin         ppm         ASTM D5185m         >4         1         <1         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         8         4           Barium         ppm         ASTM D5185m         0         <1	Lead	ppm			1	<1	0
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         8         4           Barium         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         0         1         <1         0           Manganese         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1010         1291         907         968           Calcium         ppm         ASTM D5185m         1070         1520         1169         1112           Phosphorus         ppm         ASTM D5185m         1150         1377         964         1031           Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfation         ppm         ASTM D5185m         2060         4720         3317	Copper	ppm	ASTM D5185m	>85	1	<1	0
Cadmium         ppm         ASTM D5185m         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         8         4           Barium         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1070         1520         1169         1112           Phosphorus         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         pp	Tin	ppm	ASTM D5185m	>4	1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron         ppm         ASTM D5185m         0         9         8         4           Barium         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		<1	<1	0
Barium         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         85         61         58           Manganese         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1010         1291         907         968           Calcium         ppm         ASTM D5185m         1070         1520         1169         1112           Phosphorus         ppm         ASTM D5185m         1150         1377         964         1031           Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3 </td <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th></th> <td></td> <td>4</td>	Boron	ppm	ASTM D5185m	0			4
Manganese         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1010         1291         907         968           Calcium         ppm         ASTM D5185m         1070         1520         1169         1112           Phosphorus         ppm         ASTM D5185m         1150         1377         964         1031           Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D74	Barium	ppm					· ·
Magnesium         ppm         ASTM D5185m         1010         1291         907         968           Calcium         ppm         ASTM D5185m         1070         1520         1169         1112           Phosphorus         ppm         ASTM D5185m         1150         1377         964         1031           Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         "ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION         "ASTM D7414         >2	•	ppm				61	
Calcium         ppm         ASTM D5185m         1070         1520         1169         1112           Phosphorus         ppm         ASTM D5185m         1150         1377         964         1031           Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm		ppm	ASTM D5185m				
Phosphorus         ppm         ASTM D5185m         1150         1377         964         1031           Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm		ppm					
Zinc         ppm         ASTM D5185m         1270         1683         1206         1207           Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >20         2         2         0           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1		ppm					
Sulfur         ppm         ASTM D5185m         2060         4720         3317         3591           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         >6         1         <1							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         6         1         <1							
Silicon         ppm         ASTM D5185m         >30         5         4         2           Sodium         ppm         ASTM D5185m         6         1         <1           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1			ASTM D5185m	2060	4720	3317	3591
Sodium         ppm         ASTM D5185m         6         1         <1           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1		ITS	method	limit/base	current	history1	
Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1				>30			2
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1		ppm					
Soot %         %         *ASTM D7844 >3         0.2         0.1         0.4           Nitration         Abs/cm         *ASTM D7624 >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.9         17.3         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         14.2         13.3         16.1	Potassium	ppm	ASTM D5185m	>20	2	2	0
Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.0         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         17.3         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.2         13.3         16.1	Soot %			>3			
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 14.2 13.3 16.1	Nitration			>20	6.6	5.0	
Oxidation Abs/.1mm *ASTM D7414 >25 <b>14.2</b> 13.3 16.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9	17.3	19.3
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.2         8.9         8.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	13.3	16.1
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.2	8.9	8.5



# **OIL ANALYSIS REPORT**



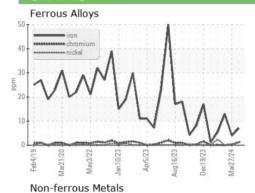


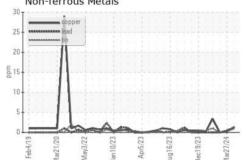


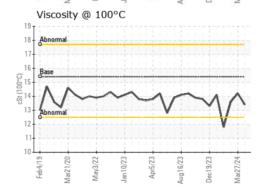
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

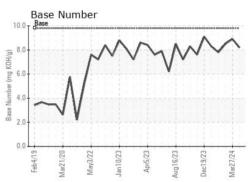
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	14.2	13.6

### **GRAPHS**













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0117157 Lab Number : 06160214 Unique Number : 10995637 Test Package : FLEET

Received **Tested** 

: 26 Apr 2024 Diagnosed : 26 Apr 2024 - Don Baldridge

: 25 Apr 2024

7801 East Truman Road Kansas City, MO US 64126

GFL Environmental - 836 - Kansas City Hauling

Contact: Loyce Stewart loyce.stewart@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: GFL836 [WUSCAR] 06160214 (Generated: 04/26/2024 13:44:35) Rev: 1

Contact/Location: GFL823,834,836,837,840 - Loyce Stewart - GFL836

T:

F: