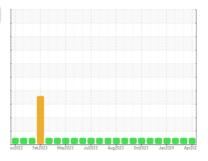


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id 812090 Component

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

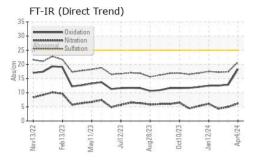
### **Fluid Condition**

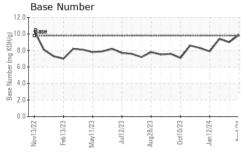
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

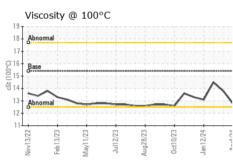
Sample Number   Client Info   GFL0115757   GFL0112359   GFL0109875   Sample Date   Client Info   O4 Apr 2024   29 Feb 2024   19 Jan 2024   Machine Age   hrs   Client Info   Age   Agr 2024   29 Feb 2024   19 Jan 2024   Agr 2024   29 Feb 2024   19 Jan 2024   Agr 2	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Date   Client Info   04 Apr 2024   29 Feb 2024   19 Jan 2024   3738   3470   3329   3329   3329   3470   3470							•
Machine Age         hrs         Client Info         3738         3470         3329           Oil Age         hrs         Client Info         409         141         408           Oil Changed         Client Info         Not Changd         Not Changd         Not Changd         Changed Changed           Sample Status         Client Info         Not Changd         Not Changd         Not Changd         NoRMAL         NoRMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0	· .						
Oil Age         hrs         Client Info         409         141         408           Oil Changed Sample Status         Client Info         Not Changd Not Changd Changed Chan	·	hrs			•		
Client Info	J						
NORMAL   NORMAL   NORMAL   NORMAL	-	0					
Fuel	-					Ŭ	
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imit/base         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         7         8         3           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         <1         <1         <1         <1           Silver         ppm         ASTM D5185m         >4         <1         0         0         0           Aluminum         ppm         ASTM D5185m         >30         0         0         0           Copper         ppm         ASTM D5185m         >40         <1         0         0           Tin         ppm         ASTM D5185m         >15         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	CONTAMINATION	NC	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
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METALS	;	method	limit/base	current	history1	history2
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1         <1         Nickel         ppm         ASTM D5185m         >4         <1         <1         0         Titanium         ppm         ASTM D5185m         >3         0         0         0         0         0         ASTM D5185m         >20         2         4         3         ASTM D5185m         >20         2         4         3         ASTM D5185m         >40         <1         0<	Iron	ppm	ASTM D5185m	>100	7	8	3
Nickel	Chromium		ASTM D5185m	>20	<1	<1	<1
Titanium	Nickel		ASTM D5185m	>4	<1	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	<1
Aluminum	Silver		ASTM D5185m	>3		0	0
Lead	Aluminum	ppm	ASTM D5185m	>20	2	4	3
Copper         ppm         ASTM D5185m         >330         2         <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	Lead				<1	0	0
Trin	Copper		ASTM D5185m	>330	2	<1	<1
Vanadium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         O           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         52         6         7           Barium         ppm         ASTM D5185m         0         0         0         3           Molybdenum         ppm         ASTM D5185m         0         55         64         62           Manganese         ppm         ASTM D5185m         0         <1	• •				<1		
ADDITIVES	Vanadium		ASTM D5185m				
Boron   ppm   ASTM D5185m   0   52   6   7	Cadmium		ASTM D5185m		<1		
Barium         ppm         ASTM D5185m         0         0         0         3           Molybdenum         ppm         ASTM D5185m         60         55         64         62           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         532         769         751           Calcium         ppm         ASTM D5185m         1070         1449         1174         1194           Phosphorus         ppm         ASTM D5185m         1150         723         1034         886           Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base <td>ADDITIVES</td> <td></td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         55         64         62           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         532         769         751           Calcium         ppm         ASTM D5185m         1070         1449         1174         1194           Phosphorus         ppm         ASTM D5185m         1150         723         1034         886           Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>52</th> <td>6</td> <td>7</td>	Boron	ppm	ASTM D5185m	0	52	6	7
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         532         769         751           Calcium         ppm         ASTM D5185m         1070         1449         1174         1194           Phosphorus         ppm         ASTM D5185m         1150         723         1034         886           Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D741	Barium	ppm	ASTM D5185m	0	0	0	3
Magnesium         ppm         ASTM D5185m         1010         532         769         751           Calcium         ppm         ASTM D5185m         1070         1449         1174         1194           Phosphorus         ppm         ASTM D5185m         1150         723         1034         886           Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         24         2         0           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7415         >30	Molybdenum	ppm	ASTM D5185m	60	55	64	62
Calcium         ppm         ASTM D5185m         1070         1449         1174         1194           Phosphorus         ppm         ASTM D5185m         1150         723         1034         886           Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         >20         2         5         2           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method<		ppm	ASTM D5185m	0	<1	<1	0
Phosphorus         ppm         ASTM D5185m         1150         723         1034         886           Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         >20         2         5         2           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method	Magnesium	ppm	ASTM D5185m	1010	532	769	751
Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         24         2         0           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	Calcium		ASTM D5185m	1070	1449	1174	1194
Zinc         ppm         ASTM D5185m         1270         876         1204         1190           Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         24         2         0           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	Phosphorus	ppm	ASTM D5185m	1150	723	1034	886
Sulfur         ppm         ASTM D5185m         2060         2429         3221         3203           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         24         2         0           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5			ASTM D5185m	1270	876	1204	1190
Silicon         ppm         ASTM D5185m         >25         12         4         4           Sodium         ppm         ASTM D5185m         24         2         0           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	Sulfur		ASTM D5185m	2060	2429	3221	3203
Sodium         ppm         ASTM D5185m         24         2         0           Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	CONTAMINANT	ſS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         5         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	Silicon	ppm	ASTM D5185m	>25	12	4	4
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	Sodium	ppm	ASTM D5185m		24	2	0
Soot %         %         *ASTM D7844         >3         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION method limit/base current         bistory1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	Potassium	ppm	ASTM D5185m	>20	2	5	2
Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         6.2         5.0         4.3           Sulfation         Abs/.1mm         *ASTM D7615         >30         20.8         17.4         17.2           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5	Soot %	%	*ASTM D7844	>3	0.1	0.2	0.1
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.8         17.4         17.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.3         12.8         12.5							
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.3</b> 12.8 12.5							
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.3	12.8	12.5
		mg KOH/g	ASTM D2896	9.8	9.9	9.0	9.4



## **OIL ANALYSIS REPORT**



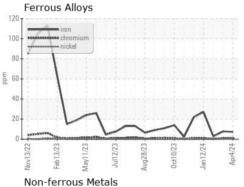


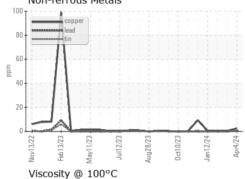


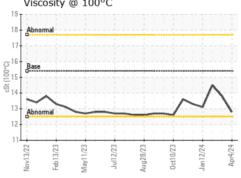
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

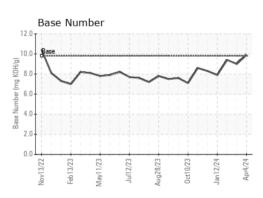
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.8	13.8	14.5

### **GRAPHS**













Certificate 12367

Laboratory Sample No. Lab Number : 06139510

: GFL0115757 Unique Number : 10964318 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Apr 2024 **Tested** 

: 05 Apr 2024 Diagnosed : 06 Apr 2024 - Don Baldridge

GFL Environmental - 010 - Stockbridge

1280 Rum Creek Parkway Stockbridge, GA

US 30281

Contact: JOSHUA TINKER joshuatinker@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: GFL010 [WUSCAR] 06139510 (Generated: 04/06/2024 15:31:23) Rev: 1

Submitted By: JOSHUA TINKER

T:

F: