

# **OIL ANALYSIS REPORT**

## Sample Rating Trend



NORMAL



**828029-1085** 

Component

**Diesel Engine** 

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

## 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

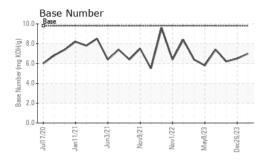
## **Fluid Condition**

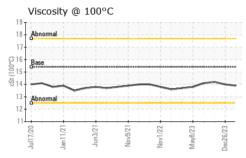
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   fimil/base   current   history1   history2	LTR)							
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Machine Age   hrs   Client Info   12806   11262   11919   1900   1344   450   562   162	Sample Number		Client Info		GFL0058058	GFL0100160	GFL0058081	
Oil Age         hrs         Client Info         444         450         562           Oil Changed         Client Info         Not Changed         Changed         Changed           Sample Status         Client Info         NoRMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history2           Fuel         WC Method         >3.0         <1.0	Sample Date		Client Info		27 Mar 2024	26 Dec 2023	02 Oct 2023	
Oil Changed Sample Status         Client Info MoRMAL         Not Change NORMAL         Changed NORMAL         Changed NoRMAD         Change NoE         Change NoE         <	Machine Age	hrs	Client Info		12806	11262	11919	
Sample Status	Oil Age	hrs	Client Info		444	450	562	
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <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         <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	Oil Changed		Client Info		Not Changd	Changed	Changed	
Fuel	Sample Status				NORMAL	NORMAL	NORMAL	
Water Glycol         WC Method Glycol         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         17         6         11           Chromium         ppm         ASTM D5185m         >20         <1         0         <1           Nickel         ppm         ASTM D5185m         >5         1         0         <1           Silver         ppm         ASTM D5185m         >2         <1         0         <1           Silver         ppm         ASTM D5185m         >2         <1         0         <1           Silver         ppm         ASTM D5185m         >20         4         <1         2           Lead         ppm         ASTM D5185m         >40         <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	CONTAMINATI	ON	method	limit/base	current	history1	history2	
Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         17         6         11           Chromium         ppm         ASTM D5185m         >20         <1         0         <1           Nickel         ppm         ASTM D5185m         >5         1         0         <1           Silver         ppm         ASTM D5185m         >2         <1         0         0           Aluminum         ppm         ASTM D5185m         >2         <1         0         0           Aluminum         ppm         ASTM D5185m         >20         4         <1         2           Lead         ppm         ASTM D5185m         >40         <1         <1         <1           Copper         ppm         ASTM D5185m         >15         <1         0         <1           Vanadium         ppm         ASTM D5185m         >15         <1         0         0           Cadmium         ppm         ASTM D5185m         0         4         3         2	Fuel		WC Method	>3.0	<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	WEAR METALS	3	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>120			11	
Titanium         ppm         ASTM D5185m         >2         <1	Chromium	ppm	ASTM D5185m	>20	<1	0	<1	
Silver	Nickel	ppm			1		<1	
Aluminum		ppm	ASTM D5185m	>2	<1			
Lead		• • • • • • • • • • • • • • • • • • • •						
Copper         ppm         ASTM D5185m         >330         2         <1		ppm			-			
Tin         ppm         ASTM D5185m         >15         <1		• •						
Vanadium         ppm         ASTM D5185m         <1								
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         3         2           Barium         ppm         ASTM D5185m         0		• • • • • • • • • • • • • • • • • • • •		>15				
ADDITIVES								
Boron         ppm         ASTM D5185m         0         4         3         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         59         55         64           Manganese         ppm         ASTM D5185m         1010         928         917         951           Calcium         ppm         ASTM D5185m         1070         1031         1068         1054           Phosphorus         ppm         ASTM D5185m         1070         1031         1068         1054           Phosphorus         ppm         ASTM D5185m         1270         1216         1172         1275           Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base		ppm			0		-	
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         59         55         64           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method		current		•	
Molybdenum         ppm         ASTM D5185m         60         59         55         64           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         928         917         951           Calcium         ppm         ASTM D5185m         1070         1031         1068         1054           Phosphorus         ppm         ASTM D5185m         1150         945         896         986           Zinc         ppm         ASTM D5185m         1270         1216         1172         1275           Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >4 <th>Boron</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Boron							
Manganese         ppm         ASTM D5185m         0         <1					-	-	-	
Magnesium         ppm         ASTM D5185m         1010         928         917         951           Calcium         ppm         ASTM D5185m         1070         1031         1068         1054           Phosphorus         ppm         ASTM D5185m         1150         945         896         986           Zinc         ppm         ASTM D5185m         1270         1216         1172         1275           Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION         *AS								
Calcium         ppm         ASTM D5185m         1070         1031         1068         1054           Phosphorus         ppm         ASTM D5185m         1150         945         896         986           Zinc         ppm         ASTM D5185m         1270         1216         1172         1275           Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation	•							
Phosphorus         ppm         ASTM D5185m         1150         945         896         986           Zinc         ppm         ASTM D5185m         1270         1216         1172         1275           Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/.mm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.	-							
Zinc         ppm         ASTM D5185m         1270         1216         1172         1275           Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9								
Sulfur         ppm         ASTM D5185m         2060         3227         2510         2879           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         >20         2         0         1           Potassium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9		• •						
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         6         4         4           Potassium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9	-				-			
Silicon         ppm         ASTM D5185m         >25         6         4         7           Sodium         ppm         ASTM D5185m         6         4         4           Potassium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9	CONTAMINAN <sup>-</sup>		method	limit/base	current	history1	history2	
Sodium         ppm         ASTM D5185m         6         4         4           Potassium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9								
Potassium         ppm         ASTM D5185m         >20         2         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9				720				
Soot %         %         *ASTM D7844         >4         0.4         0.4         0.6           Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9				>20				
Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9	INFRA-RED		method	limit/base	current	history1	history2	
Nitration         Abs/cm         *ASTM D7624         >20         8.5         8.1         8.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9	Soot %	%	*ASTM D7844	>4	0.4	0.4	0.6	
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         19.1         19.3           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.3         15.3         14.9	Nitration	Abs/cm		>20				
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.3</b> 15.3 14.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.9			
	FLUID DEGRADATION method limit/base current history1 history2							
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.3	15.3	14.9	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.0	6.5	6.2	



# **OIL ANALYSIS REPORT**

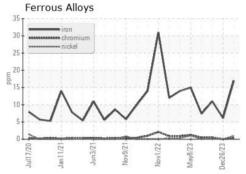


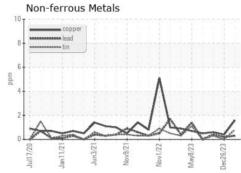


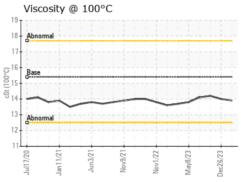
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

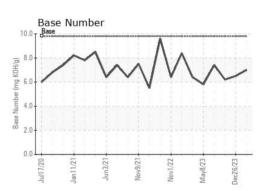
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.0	14.2

## **GRAPHS**













Certificate L2367

Laboratory Sample No.

Lab Number : 06131647 Unique Number : 10951112 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0058058 Received : 28 Mar 2024 **Tested** : 28 Mar 2024

Diagnosed : 28 Mar 2024 - Wes Davis

GFL Environmental - 657 - Charlottesville Hauling

5498 Richmond Road Troy, VA US 22974

Contact: Brian Ulickas bulickas@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: GFL657 [WUSCAR] 06131647 (Generated: 03/28/2024 17:50:34) Rev: 1

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