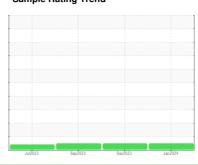


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id **413132** 

Component **Diesel Engine** 

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

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Engine )

#### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

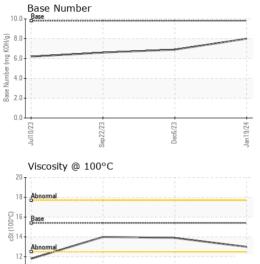
### **Fluid Condition**

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

Machine Age         mls         Client Info         40979         35929         25651           Oil Age         mls         Client Info         40979         35929         25621           Oil Changed         Client Info         Changed         N/A         Changed           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG	GAL)		Jul202	Sep2023	Dec2023 Ja	n2024	
Sample Date	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age         mls         Client Info         40979         35929         25651           Oil Age         mis         Client Info         40979         35929         25621           Oil Changed         Client Info         Changed         N/A         Changed           Sample Status         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         Imit base         current         history1         history2           Fuel         WC Method         >5         <1.0	Sample Number		Client Info		GFL0105505	GFL0094058	GFL0094101
Oil Age	Sample Date		Client Info		19 Jan 2024	06 Dec 2023	22 Sep 2023
Client Info   Changed N/A   NORMAL   NORMAL   NORMAL	Machine Age	mls	Client Info		40979	35929	25651
NORMAL   NORMAL   NORMAL   NORMAL	Oil Age	mls	Client Info		40979	35929	25621
Fuel	Oil Changed		Client Info		Changed	N/A	Changed
Fuel   WC Method   S5	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imitibase         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         0         11         16           Chromium         ppm         ASTM D5185m         >20         <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
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         0         0         0           Titanium         ppm         ASTM D5185m         >3         0         <1	WEAR METALS	;	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	0	11	16
Titanium         ppm         ASTM D5185m         0         0         0           Silver         ppm         ASTM D5185m         >3         0         <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4			
Aluminum         ppm         ASTM D5185m         >20         2         3         5           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         <1		ppm	ASTM D5185m		0	0	
Lead							
Copper         ppm         ASTM D5185m         >330         <1         3         5           Tin         ppm         ASTM D5185m         >15         0         0         <1		ppm					
Tin							
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0         <1           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         <1         1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         9         21         84           Calcium         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1150         1044         1186         997           Zinc         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/b	` ` `						
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         <1				>15			
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         51         49         39           Manganese         ppm         ASTM D5185m         0         <1					-		
Boron		ppm					
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         51         49         39           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         9         21         84           Calcium         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >225         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/b	ADDITIVES		method				history2
Molybdenum         ppm         ASTM D5185m         60         51         49         39           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         9         21         84           Calcium         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1150         1044         1186         997           Zinc         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >20 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         9         21         84           Calcium         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1150         1044         1186         997           Zinc         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7845					-		
Magnesium         ppm         ASTM D5185m         1010         9         21         84           Calcium         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1150         1044         1186         997           Zinc         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         *ASTM D7414         >25<							
Calcium         ppm         ASTM D5185m         1070         2385         2723         2314           Phosphorus         ppm         ASTM D5185m         1150         1044         1186         997           Zinc         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         "ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         "ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADAT	•						
Phosphorus         ppm         ASTM D5185m         1150         1044         1186         997           Zinc         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs	-						
Zinc         ppm         ASTM D5185m         1270         1206         1386         1191           Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7							
Sulfur         ppm         ASTM D5185m         2060         2905         3513         3527           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         0         2         <1							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         0         2         <1							
Silicon         ppm         ASTM D5185m         >25         6         9         8           Sodium         ppm         ASTM D5185m         0         2         <1           Potassium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7		• •					
Sodium         ppm         ASTM D5185m         0         2         <1           Potassium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7							
Potassium         ppm         ASTM D5185m         >20         0         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7				>20			
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7				>20			
Soot %         %         *ASTM D7844 >3         0.1         0.2         0.2           Nitration         Abs/cm         *ASTM D7624 >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.0         18.9         18.5           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         10.0         11.7         11.7		рріп					
Nitration         Abs/cm         *ASTM D7624         >20         7.1         8.7         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7		0/					
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.0         18.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         10.0         11.7         11.7							
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     10.0     11.7     11.7							
Oxidation Abs/.1mm *ASTM D7414 >25 <b>10.0</b> 11.7 11.7							
		ATION					
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.0         6.9         6.6							
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.0	6.9	6.6



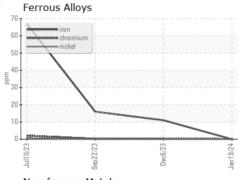
# **OIL ANALYSIS REPORT**

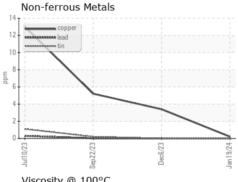


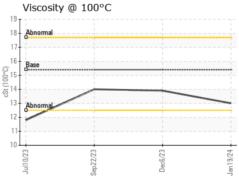
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

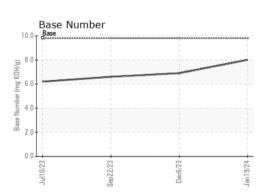
FLUID PROPI	ERITES	method	ilmit/base		nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.0	13.9	14.0

## **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10846924

Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0105505 : 06070247

Recieved : 25 Jan 2024 Diagnosed : 26 Jan 2024 Diagnostician : Don Baldridge GFL Environmental - 983 - Sugar Land Hauling 16011 West Belfort Street Sugar Land, TX

US 77498 Contact: Adrian Martinez

adrianmartinez@gflenv.com T:

\* - 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)

F: