

# **OIL ANALYSIS REPORT**

DT



NORMAL



Machine Id **425118** 

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

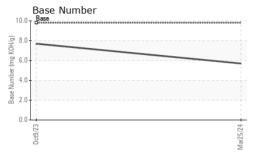
### **Fluid Condition**

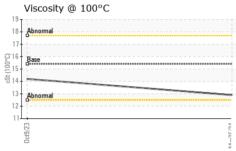
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Client Info	iAL)			Oct2023	Mar2024			
Client Info	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2	
Machine Age   hrs   Client Info   Ago   600	Sample Number		Client Info		GFL0097855	GFL0085300		
Oil Age	Sample Date		Client Info		25 Mar 2024	09 Oct 2023		
Coli   Changed   Client Info   N/A   N/A   NORMAL   NOR	Machine Age	hrs	Client Info		0	0		
CONTAMINATION	Oil Age	hrs	Client Info		490	600		
CONTAMINATION	Oil Changed		Client Info		N/A	N/A		
Water   WC Method   So.2   NEG   N	Sample Status				NORMAL	NORMAL		
Water         WC Method         0.2.         NEG         NEG            Glycol         WC Method         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >11.0         42         2.1            Chromium         ppm         ASTM D5185m         >2         0         0            Nickel         ppm         ASTM D5185m         >2         0         0            Silver         ppm         ASTM D5185m         >2         0         0            Silver         ppm         ASTM D5185m         >2         0         0            Silver         ppm         ASTM D5185m         >25         2         1            Silver         ppm         ASTM D5185m         >25         2         1            Copper         ppm         ASTM D5185m         >45         11         <1	CONTAMINATION	NC	method	limit/base	current	history1	history2	
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0		
WEAR METALS	Water		WC Method	>0.2	NEG	NEG		
Chromium	Glycol		WC Method		NEG	NEG		
Chromium	WEAR METALS	5	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>110	42	21		
Titanium	Chromium	ppm	ASTM D5185m	>4	2	1		
Silver	Nickel	ppm	ASTM D5185m	>2	0	0		
Aluminum	Titanium	ppm	ASTM D5185m		0	<1		
Lead	Silver	ppm	ASTM D5185m	>2		0		
Copper         ppm         ASTM D5185m         >85         12         5            Tin         ppm         ASTM D5185m         >4         <1	Aluminum	ppm	ASTM D5185m	>25	2	1		
Tin	Lead	ppm	ASTM D5185m	>45				
Vanadium         ppm         ASTM D5185m         0         <1            Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         25            Barium         ppm         ASTM D5185m         0         0         12            Molybdenum         ppm         ASTM D5185m         0         0         12            Molybdenum         ppm         ASTM D5185m         0         0         12            Manganese         ppm         ASTM D5185m         0         0         1         <1            Magnesium         ppm         ASTM D5185m         1070         1269         1327            Phosphorus         ppm         ASTM D5185m         1070         1218         1119            Zinc         ppm         ASTM D5185m         1270         1218         1119            Sulfur         ppm         ASTM D5185m         2060         3148	Copper	ppm	ASTM D5185m	>85	12	5		
Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         25            Barium         ppm         ASTM D5185m         0         0         12            Molybdenum         ppm         ASTM D5185m         0         -1         <1	Tin	ppm		>4				
ADDITIVES	Vanadium	ppm	ASTM D5185m					
Boron   ppm   ASTM D5185m   0   0   12	Cadmium	ppm	ASTM D5185m		0	0		
Barium	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         60         53         50            Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	9	25		
Manganese         ppm         ASTM D5185m         0         <1         <1            Magnesium         ppm         ASTM D5185m         1010         928         800            Calcium         ppm         ASTM D5185m         1070         1269         1327            Phosphorus         ppm         ASTM D5185m         1150         894         906            Zinc         ppm         ASTM D5185m         1270         1218         1119            Sulfur         ppm         ASTM D5185m         2060         3148         2798            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         8         11            Sodium         ppm         ASTM D5185m         >30         8         11            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2 <td colspan<="" td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><td>0</td><td>12</td><td></td></td>	<td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>0</td> <td>12</td> <td></td>	Barium	ppm	ASTM D5185m	0	0	12	
Magnesium         ppm         ASTM D5185m         1010         928         800            Calcium         ppm         ASTM D5185m         1070         1269         1327            Phosphorus         ppm         ASTM D5185m         1150         894         906            Zinc         ppm         ASTM D5185m         1270         1218         1119            Sulfur         ppm         ASTM D5185m         2060         3148         2798            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         8         11            Sodium         ppm         ASTM D5185m         6         10            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *AS	Molybdenum	ppm			53	50		
Calcium         ppm         ASTM D5185m         1070         1269         1327            Phosphorus         ppm         ASTM D5185m         1150         894         906            Zinc         ppm         ASTM D5185m         1270         1218         1119            Sulfur         ppm         ASTM D5185m         2060         3148         2798            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         8         11            Sodium         ppm         ASTM D5185m         6         10            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D741	Manganese	ppm	ASTM D5185m	0	<1	<1		
Phosphorus         ppm         ASTM D5185m         1150         894         906            Zinc         ppm         ASTM D5185m         1270         1218         1119            Sulfur         ppm         ASTM D5185m         2060         3148         2798            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         8         11            Sodium         ppm         ASTM D5185m         6         10            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION         method <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <td>928</td> <td>800</td> <td></td>	Magnesium	ppm	ASTM D5185m	1010	928	800		
Zinc	Calcium	ppm	ASTM D5185m	1070		1327		
Sulfur         ppm         ASTM D5185m         2060         3148         2798            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         8         11            Sodium         ppm         ASTM D5185m         6         10            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.4         22.8	Phosphorus	ppm	ASTM D5185m	1150	894	906		
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         8         11            Sodium         ppm         ASTM D5185m         6         10            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.4         22.8	Zinc	ppm	ASTM D5185m		1218			
Silicon   ppm   ASTM D5185m   >30   8   11       Sodium   ppm   ASTM D5185m   6   10       Potassium   ppm   ASTM D5185m   >20   0   3       INFRA-RED   method   limit/base   current   history1   history2     Soot %   % *ASTM D7844   >3   0.5   0.3       Nitration   Abs/cm *ASTM D7624   >20   11.9   9.8       Sulfation   Abs/.1mm *ASTM D7415   >30   26.9   23.3       FLUID DEGRADATION   method   limit/base   current   history1   history2     Oxidation   Abs/.1mm *ASTM D7414   >25   28.4   22.8	Sulfur	• •	ASTM D5185m	2060	3148	2798		
Sodium         ppm         ASTM D5185m         6         10            Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.4         22.8	CONTAMINANT	rs		limit/base	current	history1	history2	
Potassium         ppm         ASTM D5185m         >20         0         3            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.4         22.8	Silicon	ppm		>30				
INFRA-RED	Sodium	ppm						
Soot %         %         *ASTM D7844 >3         0.5         0.3            Nitration         Abs/cm         *ASTM D7624 >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415 >30         26.9         23.3            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         28.4         22.8	Potassium	ppm	ASTM D5185m	>20	0	3		
Nitration         Abs/cm         *ASTM D7624         >20         11.9         9.8            Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.4         22.8	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation         Abs/.1mm         *ASTM D7415         >30         26.9         23.3            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.4         22.8	Soot %	%	*ASTM D7844	>3	0.5	0.3		
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 28.4 22.8	Nitration	Abs/cm	*ASTM D7624	>20	11.9	9.8		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	26.9	23.3		
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2	
Base Number (BN) mg KOH/g ASTM D2896 9.8 5.7 7.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	28.4	22.8		
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	5.7	7.7		



# **OIL ANALYSIS REPORT**

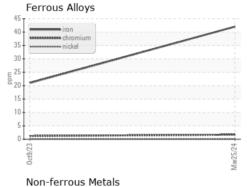


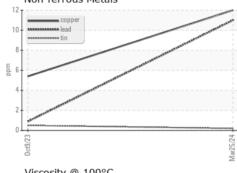


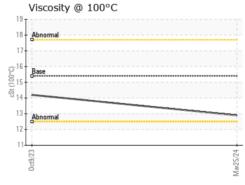
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance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

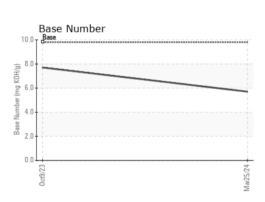
FLUID PROPE	ERITES	method	limit/base		history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.9	14.2	

### **GRAPHS**













Certificate L2367

Laboratory Sample No.

Lab Number : 06132677 Unique Number : 10952142 Test Package : FLEET

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0097855 Received : 28 Mar 2024 **Tested** : 30 Mar 2024

Diagnosed

: 02 Apr 2024 - Sean Felton

GFL Environmental - 958 - Tri County HC Morton

1090 W. Jefferson St. Morton, IL US 61550

Contact: Bryan Link blink@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)

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