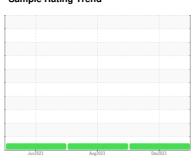


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id 713048

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

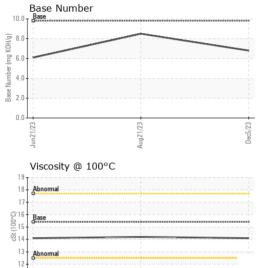
### **Fluid Condition**

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

SAMPLE INFORMATION   method   limit/bass   current   history1   history2	GAL)		Ju	1 2023	Aug2023 Dec20	23			
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2		
Machine Age   hrs   Client Info   2715   2087   1701	Sample Number		Client Info		GFL0098431	GFL0089479	GFL0084535		
Oil Age         hrs         Client Info         2715         0         0           Oil Changed Sample Status         Client Info         Changed Changed Changed Changed Changed NORMAL	Sample Date		Client Info		05 Dec 2023	21 Aug 2023	21 Jun 2023		
Oil Changed Sample Status	Machine Age	hrs	Client Info		2715	2087	1701		
Sample Status	Oil Age	hrs	Client Info		2715	0	0		
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed		
Fuel	Sample Status				NORMAL	NORMAL	NORMAL		
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         10         8         33           Chromium         ppm         ASTM D5185m         >20         <1	<th>CONTAMINAT</th> <th>ION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>		CONTAMINAT	ION	method	limit/base	current	history1	history2
Copper   Dept.   Dep	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	WEAR METAL	.S	method	limit/base	current	history1	history2		
Nickel	Iron	ppm	ASTM D5185m	>100	10	8	33		
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1		
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         4         12           Lead         ppm         ASTM D5185m         >40         0         0         2           Copper         ppm         ASTM D5185m         >15         <1	Nickel	ppm	ASTM D5185m	>4	<1	0	<1		
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	0		
Lead         ppm         ASTM D5185m         >40         0         0         2           Copper         ppm         ASTM D5185m         >330         1         <1         4           Tin         ppm         ASTM D5185m         >15         <1         <1         2           Vanadium         ppm         ASTM D5185m         0         0         <1         2           Vanadium         ppm         ASTM D5185m         0         0         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         <1         6           Barium         ppm         ASTM D5185m         0         12         0         0           Malerum         ppm         ASTM D5185m         0         -1         <1         3           Magnesium         ppm         ASTM D5185m         0         -1         <1         3           Quality         ppm         ASTM D5185m         100         1037         1148         1212           Phosphorus         ppm         ASTM D5185m         1270         1239<	Silver	ppm	ASTM D5185m	>3	0	0	0		
Copper         ppm         ASTM D5185m         >330         1         <1         4           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	2	4	12		
Tin         ppm         ASTM D5185m         >15         <1         <1         2           Vanadium         ppm         ASTM D5185m         O         0         <1           Cadmium         ppm         ASTM D5185m         O         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         <1         6           Barium         ppm         ASTM D5185m         0         12         0         0           Molybdenum         ppm         ASTM D5185m         60         60         63         64           Manganese         ppm         ASTM D5185m         0         <1         <1         3           Magnesium         ppm         ASTM D5185m         1070         1037         1148         1212           Phosphorus         ppm         ASTM D5185m         1150         985         1142         1063           Zinc         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current         history1<	Lead	ppm	ASTM D5185m	>40	0	0	2		
Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         <1         6           Barium         ppm         ASTM D5185m         0         12         0         0           Molybdenum         ppm         ASTM D5185m         0         60         60         63         64           Manganese         ppm         ASTM D5185m         0         <1         <1         3           Magnesium         ppm         ASTM D5185m         1010         949         1043         1029           Calcium         ppm         ASTM D5185m         1070         1037         1148         1212           Phosphorus         ppm         ASTM D5185m         1270         1239         1388         1322           Sulfur         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current	Copper	ppm	ASTM D5185m	>330	1	<1			
Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         <1	Tin	ppm	ASTM D5185m	>15	<1	<1	2		
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	<1		
Boron	Cadmium	ppm	ASTM D5185m		<1	0	<1		
Barium	ADDITIVES		method	limit/base	current	history1	history2		
Molybdenum         ppm         ASTM D5185m         60         60         63         64           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm							
Manganese         ppm         ASTM D5185m         0         <1		ppm							
Magnesium         ppm         ASTM D5185m         1010         949         1043         1029           Calcium         ppm         ASTM D5185m         1070         1037         1148         1212           Phosphorus         ppm         ASTM D5185m         1150         985         1142         1063           Zinc         ppm         ASTM D5185m         1270         1239         1388         1322           Sulfur         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM		ppm							
Calcium         ppm         ASTM D5185m         1070         1037         1148         1212           Phosphorus         ppm         ASTM D5185m         1150         985         1142         1063           Zinc         ppm         ASTM D5185m         1270         1239         1388         1322           Sulfur         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >6         5         7           Potassium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method <td< th=""><th>-</th><th>ppm</th><th></th><th></th><th></th><th></th><th></th></td<>	-	ppm							
Phosphorus         ppm         ASTM D5185m         1150         985         1142         1063           Zinc         ppm         ASTM D5185m         1270         1239         1388         1322           Sulfur         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>									
Zinc         ppm         ASTM D5185m         1270         1239         1388         1322           Sulfur         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>									
Sulfur         ppm         ASTM D5185m         2060         3188         3975         3468           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         >20         4         4         21           Potassium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9									
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         6         5         7           Potassium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9	-								
Silicon         ppm         ASTM D5185m         >25         3         2         6           Sodium         ppm         ASTM D5185m         6         5         7           Potassium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9					3188				
Sodium         ppm         ASTM D5185m         6         5         7           Potassium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9		ITS				•			
Potassium         ppm         ASTM D5185m         >20         4         4         21           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9				>25					
INFRA-RED									
Soot %         %         *ASTM D7844 >3         0.3         0.2         0.6           Nitration         Abs/cm         *ASTM D7624 >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415 >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         18.5         15.9         22.9	Potassium	ppm	ASTM D5185m	>20	4	4	21		
Nitration         Abs/cm         *ASTM D7624         >20         9.5         8.1         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.6         18.9         23.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.5         15.9         22.9	INFRA-RED			limit/base	current	history1	history2		
Sulfation         Abs/.1mm         *ASTM D7415 >30         20.6         18.9         23.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         18.5         15.9         22.9	Soot %								
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     18.5     15.9     22.9		Abs/cm	*ASTM D7624	>20					
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.5</b> 15.9 22.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.6	18.9	23.7		
	FLUID DEGRAI	AOITAC	method	limit/base	current	history1	history2		
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         6.8         8.5         6.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.5	15.9	22.9		
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.8	8.5	6.1		



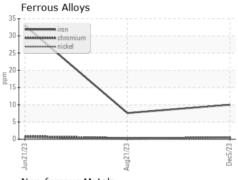
## **OIL ANALYSIS REPORT**

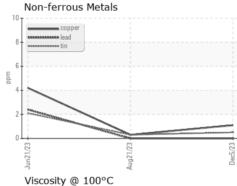


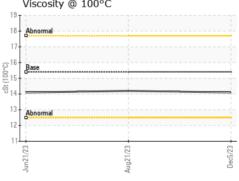
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

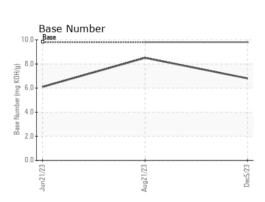
FLUID PROP	EHIIES	method			riistory i	Historyz
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.2	14.1

### **GRAPHS**













Certificate L2367

Laboratory

Sample No. Lab Number Unique Number : 10790980 Test Package : FLEET

: GFL0098431 : 06035751

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 15 Dec 2023 Diagnosed : 16 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 918 - Hartland HC 630 E Industrial Drive

Hartland, WI US 53029 Contact: David McCall david.mccall@gflenv.com

T: (262)369-3069

\* - 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: GFL918 [WUSCAR] 06035751 (Generated: 12/16/2023 05:21:02) Rev: 1

Submitted By: David McCall