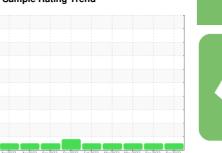


# **OIL ANALYSIS REPORT**

## Sample Rating Trend







# Machine Id 812021 Component Diesel Engine Fluid 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

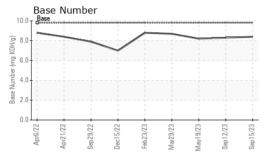
# **Fluid Condition**

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

Sample Date	JN SHP 15W4U ( GAL)  April 22 April 22 Sept 22 Over 2022 Febr 22 Mark 2023 Mark 2023 Sept 202						
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         29255         3078         29255           Oil Age         hrs         Client Info         1289         200         1289           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         6         5         9           Chromium         ppm         ASTM D5185m         >120         6         5         9           Chromium         ppm         ASTM D5185m         >120         6         5         9           Chromium         ppm         ASTM D5185m         >20         <1	Sample Number		Client Info		GFL0089513	GFL0089553	GFL0067880
Oil Age         hrs         Client Info         1289         200         1289           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         6         5         9           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >20         <1         <1         <1           Silver         ppm         ASTM D5185m         >20         <1         <1         <1           Copper         ppm         ASTM D5185m         >20         0         <1         0           Copper         ppm         ASTM D5185m         >330         11         12         3           Tin <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>15 Sep 2023</th> <td>12 Sep 2023</td> <td>19 May 2023</td>	Sample Date		Client Info		15 Sep 2023	12 Sep 2023	19 May 2023
Cilient Info   N/A   N/A   N/A   N/A   NORMAL   NORMAL	Machine Age	hrs	Client Info		29255	3078	29255
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2	Oil Age	hrs	Client Info		1289	200	1289
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2	-		Client Info		N/A	N/A	N/A
Fuel					NORMAL	NORMAL	NORMAL
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         6         5         9           Chromium         ppm         ASTM D5185m         >20         <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >5         2         2         4           Titanium         ppm         ASTM D5185m         >2         0         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	6	5	9
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	2	2	4
Aluminum         ppm         ASTM D5185m         >20         0         <1         0           Lead         ppm         ASTM D5185m         >40         0         <1	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper         ppm         ASTM D5185m         >330         11         12         3           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	0	<1	0
Copper         ppm         ASTM D5185m         >330         11         12         3           Tin         ppm         ASTM D5185m         >15         <1	Lead	ppm	ASTM D5185m	>40	0	<1	0
Tin	Copper		ASTM D5185m	>330	11	12	3
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         7         8           Barium         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         60         63         61         61           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1 <td></td> <td></td> <td></td> <td>&gt;15</td> <th>&lt;1</th> <td>&lt;1</td> <td>&lt;1</td>				>15	<1	<1	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         9         7         8           Barium         ppm         ASTM D5185m         0         <1	Vanadium						
Boron	Cadmium				0	0	0
Barium         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         60         63         61         61           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         993         1068         977           Calcium         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1150         1061         1069         996           Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >225         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1         3         2           INFRA-RED         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         63         61         61           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         993         1068         977           Calcium         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1150         1061         1069         996           Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4         2           Potassium         ppm         ASTM D5185m         >20         <1         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624	Boron	ppm	ASTM D5185m	0	9	7	8
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         993         1068         977           Calcium         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1150         1061         1069         996           Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4         2           Potassium         ppm         ASTM D5185m         >20         <1         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.4           Nitration         Abs/cm	Barium	ppm	ASTM D5185m	0	<1	0	0
Magnesium         ppm         ASTM D5185m         1010         993         1068         977           Calcium         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1150         1061         1069         996           Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >20         5.8         5.8         7.4           Nitration         Abs/:nm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION         *ASTM D7414         >25	Molybdenum	ppm	ASTM D5185m	60	63	61	61
Calcium         ppm         ASTM D5185m         1070         1107         1202         1155           Phosphorus         ppm         ASTM D5185m         1150         1061         1069         996           Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         1150         1061         1069         996           Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1010	993	1068	977
Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	1070	1107	1202	1155
Zinc         ppm         ASTM D5185m         1270         1259         1337         1285           Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m	1150	1061	1069	996
Sulfur         ppm         ASTM D5185m         2060         3686         3957         3444           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         4         4         2           Potassium         ppm         ASTM D5185m         >20         <1		ppm	ASTM D5185m	1270	1259	1337	1285
Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         4         4         2           Potassium         ppm         ASTM D5185m         >20         <1         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.4           Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.8         7.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.7         13.7         14.2	Sulfur				3686		3444
Sodium         ppm         ASTM D5185m         4         4         2           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.4           Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.8         7.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.7         13.7         14.2	Silicon	ppm	ASTM D5185m	>25	4	4	4
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.4           Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.8         7.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.7         13.7         14.2	Sodium	ppm	ASTM D5185m		4	4	2
Soot %         %         *ASTM D7844 >4         0.3         0.3         0.4           Nitration         Abs/cm         *ASTM D7624 >20         5.8         5.8         7.4           Sulfation         Abs/.1mm         *ASTM D7415 >30         18.1         18.2         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.7         13.7         14.2	Potassium	ppm	ASTM D5185m	>20	<1	3	2
Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.8         7.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.7         13.7         14.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.7         13.7         14.2	Soot %	%	*ASTM D7844	>4	0.3	0.3	0.4
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         18.2         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.7         13.7         14.2	Nitration	Abs/cm	*ASTM D7624	>20	5.8	5.8	7.4
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.7</b> 13.7 14.2				>30			18.9
	FLUID DEGRAI	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.7	13.7	14.2
	Base Number (BN)				8.4	8.3	8.2



# **OIL ANALYSIS REPORT**

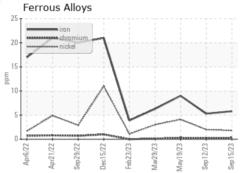


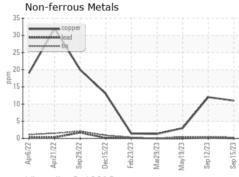
8 - Abnor	mal				
17-					
6 - Base				 	
Base			 ***************************************	 	
4			 	 	
3 - Abnor	mal			 	
Abnor	IIIai				
Abnor	IIIdi	<del> </del>	 		
Abiloi	illa.			 	

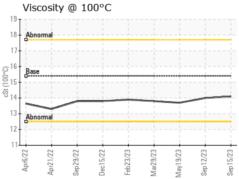
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

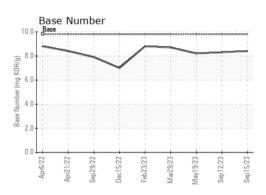
FLUID PROPE	RTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.0	13.7

# **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10655891 Test Package : FLEET

: GFL0089513 : 05954678

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 18 Sep 2023

Diagnosed : 20 Sep 2023 Diagnostician : Wes Davis

GFL Environmental - 654S - Midlothian

12230 Deergrove Road Midlothian, VA US 23112

Contact: Corbin Umphlet cumphlet@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: