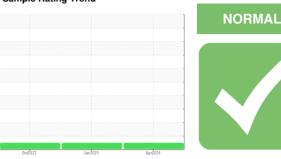


# **OIL ANALYSIS REPORT**

## Sample Rating Trend





Machine Id
420057
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

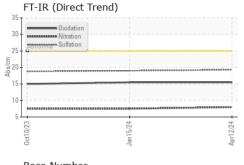
### **Fluid Condition**

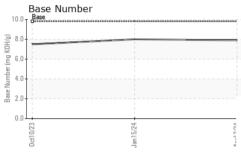
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

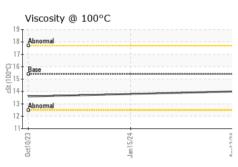
Sample Number   Client Info   GFL0111243   GFL0102129   GFL0087953   Sample Date   Client Info   12 Apr 2024   15 Jan 2024   10 Oct 2023   11 Oct 2023   13 Oct 2023   10 Oct 2023   11 Oct 2023   12 Oct 2023   10 Oct 2023   12 Oct 2023   1 Oct 2023   12	SAMPLE INFORM	ATI <u>ON</u>	method	limit/base	current	history1	history2
Sample Date						•	•
Machine Age   hrs   Client Info   11364   11364   11364   11364   11364   11364   11364   11364   11364   11364   11364   10169   1001   1008   1000   1000   1000   10008   1000   10008   1000   10008   1000   10008   10009   1037   10009   1037   10009   10009   1037   10009   10009   10009   1037   10009							
Oil Age         hrs         Client Info         600         600         600         600           Oil Changed         Client Info         Changed         Changed         Changed         Changed         Changed         Changed         Changed         NORMAL         NORM		hrs			•		
Client Info   Changed   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL							
NORMAL   NORMAL   NORMAL   NORMAL		1110					
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0	-		Olichi iilio			_	_
Fuel		NC	method	limit/hase			
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Ilmit/base         current         history1         history2           WEAR METALS         method         Ilmit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         10         4         7           Chromium         ppm         ASTM D5185m         >20         <1						•	
Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         10         4         7           Chromium         ppm         ASTM D5185m         >20         <1							
WEAR METALS				<i>&gt;</i> 0.2			
Irron				11 11 11			
Chromium         ppm         ASTM D5185m         >20         <1         0         <1           Nickel         ppm         ASTM D5185m         >5         0         0         <1	WEAR METALS		method			history1	
Nickel		ppm					
Description		ppm	ASTM D5185m	>20			
Silver	Nickel	ppm					
Aluminum         ppm         ASTM D5185m         >20         1         <1         1           Lead         ppm         ASTM D5185m         >40         <1		ppm					
Lead	Silver	ppm					
Copper         ppm         ASTM D5185m         >330         15         1         2           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	1	<1	1
Tin	Lead	ppm	ASTM D5185m	>40	<1	0	0
Vanadium         ppm         ASTM D5185m         <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         <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         <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         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Copper	ppm	ASTM D5185m	>330	15	1	2
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         12         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         -1         -1         -1           Manganese         ppm         ASTM D5185m         0         -1         -1         -1           Magnesium         ppm         ASTM D5185m         1010         1008         997         910           Calcium         ppm         ASTM D5185m         1070         1139         1069         1037           Phosphorus         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         0 <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;15</td> <th>&lt;1</th> <td>&lt;1</td> <td>&lt;1</td>	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	<1	<1
Boron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         61         59         58           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         61         59         58           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         1008         997         910           Calcium         ppm         ASTM D5185m         1070         1139         1069         1037           Phosphorus         ppm         ASTM D5185m         1150         1065         1094         965           Zinc         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4	Boron	ppm	ASTM D5185m	0	0	12	2
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         1008         997         910           Calcium         ppm         ASTM D5185m         1070         1139         1069         1037           Phosphorus         ppm         ASTM D5185m         1150         1065         1094         965           Zinc         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4         0.3 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         1008         997         910           Calcium         ppm         ASTM D5185m         1070         1139         1069         1037           Phosphorus         ppm         ASTM D5185m         1150         1065         1094         965           Zinc         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         22         3         5           Potassium         ppm         ASTM D5185m         20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7415         <	Molybdenum	ppm	ASTM D5185m	60	61	59	58
Calcium         ppm         ASTM D5185m         1070         1139         1069         1037           Phosphorus         ppm         ASTM D5185m         1150         1065         1094         965           Zinc         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         20         0         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         1150         1065         1094         965           Zinc         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         >20         0         <1	Magnesium	ppm	ASTM D5185m	1010	1008	997	910
Zinc         ppm         ASTM D5185m         1270         1243         1274         1134           Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         >20         0         <1	Calcium	ppm	ASTM D5185m	1070	1139	1069	1037
Sulfur         ppm         ASTM D5185m         2060         3537         3162         2787           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         >20         0         <1	Phosphorus	ppm	ASTM D5185m	1150	1065	1094	965
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         >20         0         <1	Zinc	ppm	ASTM D5185m	1270	1243	1274	1134
Silicon         ppm         ASTM D5185m         >25         4         4         4         4           Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         19.0         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.0	Sulfur	ppm	ASTM D5185m	2060	3537	3162	2787
Sodium         ppm         ASTM D5185m         2         3         5           Potassium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         19.0         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.0	CONTAMINANT	S	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         19.0         18.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.0	Silicon	ppm	ASTM D5185m	>25	4	4	4
INFRA-RED	Sodium	ppm	ASTM D5185m		2	3	5
Soot %         %         *ASTM D7844 >4         0.3         0.2         0.3           Nitration         Abs/cm         *ASTM D7624 >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.3         19.0         18.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.5         15.0	Potassium	ppm	ASTM D5185m	>20	0	<1	0
Nitration         Abs/cm         *ASTM D7624         >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         19.0         18.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.0	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         8.0         7.5         7.5           Sulfation         Abs/.1mm         *ASTM D7615         >30         19.3         19.0         18.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.0	Soot %	%	*ASTM D7844	>4	0.3	0.2	0.3
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         19.0         18.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.5         15.0							
Oxidation							
	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
			******				4 = 0
	Oxidation	Abs/.1mm	*ASTM1)/414	>25	15.5	15.5	15.0



# **OIL ANALYSIS REPORT**



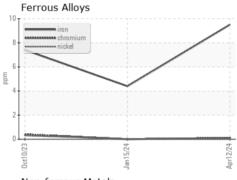


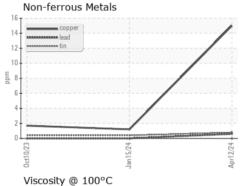


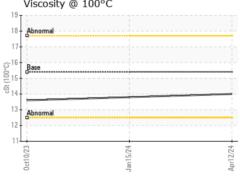
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

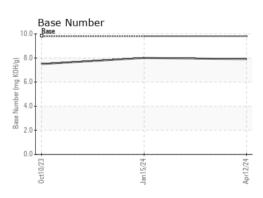
FLUID PROP	ERITES	method	ilmit/base		nistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.8	13.6

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

Lab Number : 06154091 Unique Number : 10989514

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0111243

Tested : 22 Apr 2024 Diagnosed

Received

: 22 Apr 2024 - Wes Davis

GFL Environmental - 960B - Pittsfield HC 1335 W. Washington Pittsfield, IL US 62363

> Contact: David Bradshaw david.bradshaw@gflenv.com T:

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)

: 19 Apr 2024