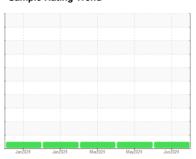


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



525130
Component
Diesel Engine

Machine Id

## 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

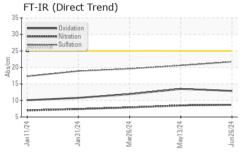
### **Fluid Condition**

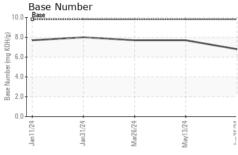
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

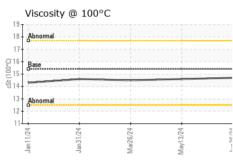
SAMPLE INFORMATION   method   limit/base   current   history1   Sample Number   Client Info   26 Jun 2024   13 May 2024   26 Mar 2024   10 M	āAL)		Jan 2024	Jan 2024	Mar2024 May2024	Jun2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0122857	GFL0122811	GFL0114160
Machine Age         hrs         Client Info         938         0         133           Oil Age         hrs         Client Info         938         0         133           Oil Changed         Client Info         Not Changd         Not Changd <th< td=""><td></td><td></td><td>Client Info</td><td></td><th>26 Jun 2024</th><td>13 May 2024</td><td>26 Mar 2024</td></th<>			Client Info		26 Jun 2024	13 May 2024	26 Mar 2024
Oil Age         hrs         Client Info         938         0         133           Oil Changed Sample Status         Client Info         Not Changed Not Cha	•	hrs	Client Info		1347	1225	949
Oil Changed Sample Status         Client Info         Not Changd NORMAL	<u> </u>	hrs	Client Info		938	0	133
Fuel			Client Info		Not Changd	Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         10         7         5           Chromium         ppm         ASTM D5185m         >5         <1         0         <1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Sliver         ppm         ASTM D5185m         >2         0         0         0           Sliver         ppm         ASTM D5185m         >3         0         0         0           Sliver         ppm         ASTM D5185m         >30         3         2         2           Lead         ppm         ASTM D5185m         >30         0         0         1           Copper         ppm         ASTM D5185m         >5         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         <1           Cadmium         ppm         ASTM D5185m         0         10         4         5<	CONTAMINAT	ION	method	limit/base	current	history1	history2
Second   WC Method   NEG   NEG   NEG	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         10         7         5           Chromium         ppm         ASTM D5185m         >5         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >5         <1         0         <1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >30         3         2         2           Lead         ppm         ASTM D5185m         >30         0         0         1           Copper         ppm         ASTM D5185m         >30         0         0         1           Copper         ppm         ASTM D5185m         >150         18         19         16           Tin         ppm         ASTM D5185m         >5         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>80	10	7	5
Titanium         ppm         ASTM D5185m         0         0         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >30         3         2         2           Lead         ppm         ASTM D5185m         >30         0         0         1           Copper         ppm         ASTM D5185m         >150         18         19         16           Tin         ppm         ASTM D5185m         >5         <1	Chromium	ppm	ASTM D5185m	>5	<1	0	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m		0	0	0
Lead         ppm         ASTM D5185m         >30         0         0         1           Copper         ppm         ASTM D5185m         >150         18         19         16           Tin         ppm         ASTM D5185m         >5         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         10         4         5           Barium         ppm         ASTM D5185m         0         10         4         5           Barium         ppm         ASTM D5185m         0         10         4         5           Barium         ppm         ASTM D5185m         0         1         4         5           Barium         ppm         ASTM D5185m         0         1         1         1         1         1           Magnesium         ppm         ASTM D5185m         1010         189	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >150         18         19         16           Tin         ppm         ASTM D5185m         >5         <1	Aluminum	ppm	ASTM D5185m	>30	3	2	2
Tin         ppm         ASTM D5185m         >5         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         10         4         5           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         4         1         <1	Lead	ppm			0	0	1
Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         10         4         5           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         189         195         243           Calcium         ppm         ASTM D5185m         1070         2526         2442         2658           Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         <	Copper	ppm	ASTM D5185m	>150	18	19	16
Cadmium         ppm         ASTM D5185m         0	Tin	ppm	ASTM D5185m	>5	<1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron         ppm         ASTM D5185m         0         10         4         5           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         38         40         38           Manganese         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         38         40         38           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         189         195         243           Calcium         ppm         ASTM D5185m         1070         2526         2442         2658           Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/bas	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         38         40         38           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         189         195         243           Calcium         ppm         ASTM D5185m         1070         2526         2442         2658           Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method	Boron	ppm	ASTM D5185m	0			
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         189         195         243           Calcium         ppm         ASTM D5185m         1070         2526         2442         2658           Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1		ppm			-		
Magnesium         ppm         ASTM D5185m         1010         189         195         243           Calcium         ppm         ASTM D5185m         1070         2526         2442         2658           Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1	•	ppm					
Calcium         ppm         ASTM D5185m         1070         2526         2442         2658           Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1	-	ppm	ASTM D5185m				
Phosphorus         ppm         ASTM D5185m         1150         1039         1057         983           Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1	-	ppm					
Zinc         ppm         ASTM D5185m         1270         1243         1213         1348           Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1		ppm					
Sulfur         ppm         ASTM D5185m         2060         3275         3181         3731           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         >20         <1							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1							
Silicon         ppm         ASTM D5185m         >20         10         5         9           Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.7         8.5         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.6         19.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.5         11.9			ASTM D5185m	2060	3275	3181	3731
Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1		ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.7         8.5         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.6         19.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.5         11.9				>20			
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.7         8.5         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.6         19.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.5         11.9		ppm			3		
Soot %         %         *ASTM D7844         >3         0.3         0.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.7         8.5         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.6         19.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.5         11.9	Potassium	ppm	ASTM D5185m	>20	<1	0	1
Nitration         Abs/cm         *ASTM D7624         >20         8.7         8.5         7.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.6         19.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.5         11.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.6         19.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         13.5         11.9	Soot %	%	*ASTM D7844	>3	0.3		0.2
FLUID DEGRADATION method limit/base current history1 history2       Oxidation     Abs/.1mm     *ASTM D7414 >25     12.9     13.5     11.9	Nitration	Abs/cm	*ASTM D7624	>20	8.7	8.5	7.9
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.7	20.6	19.6
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.9	13.5	11.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.8	7.7	7.7



# **OIL ANALYSIS REPORT**



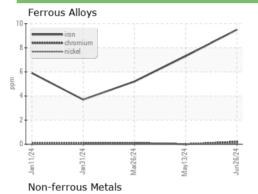


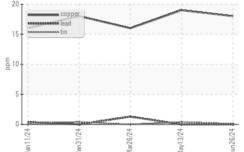


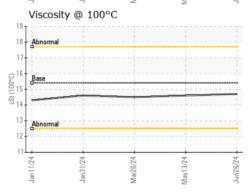
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

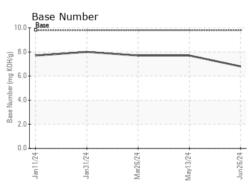
	ERITES	method			riistory i	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	14.7	14.6	14.5

### **GRAPHS**













Report Id: GFL837 [WUSCAR] 06225639 (Generated: 07/03/2024 19:13:50) Rev: 1

Laboratory Sample No.

: GFL0122857 Lab Number : 06225639 Unique Number : 11103836

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 01 Jul 2024

**Tested** : 03 Jul 2024 Diagnosed : 03 Jul 2024 - Don Baldridge

22820 S State Route 291 Harrisonville, MO

GFL Environmental - 837 - Harrison TS

US 64701 Contact: SARA PATRICK spatrick@gflenv.com

Test Package : FLEET Certificate 12367 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)

Submitted By: JEREMY BROWN

T:

F: