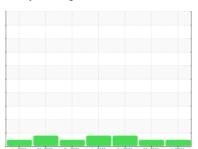


# **OIL ANALYSIS REPORT**

Sample Rating Trend



**NORMAL** 



Machine Id 211005-632125

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

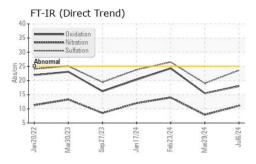
## **Fluid Condition**

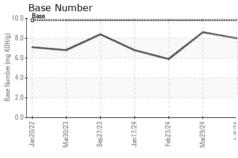
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

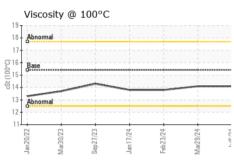
Sample Date   Client Info   176957   4211   4034	AL)		Jan 2022	Mar2023 Sep2023	Jan2024 Feb2024 Mar2024	Jul2024	
Sample Date   Client Info   06 Jul 2024   29 Mar 2024   23 Feb 2024   Machine Age   mls   Client Info   0   0   0   4034	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age         mls         Client Info         176957         4211         4034           Oil Age         mls         Client Info         0         0         4034           Oil Changed         Client Info         Not Changd         Changed	Sample Number		Client Info		GFL0125184	GFL0114441	GFL0114467
Oil Age         mls         Client Info         Not Changed         Changed Changed Changed Changed Changed NORMAL         A034           Sample Status         Client Info         Not Changed NORMAL         Changed Changed Changed Changed Changed Changed Changed NORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0         <1.0           Water         WC Method         >5         <1.0         <1.0         <1.0         <1.0           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         26         12         67           Chromium         ppm         ASTM D5185m         >20         1         <1         2           Nickel         ppm         ASTM D5185m         >4         0         0         <1         1           Silver         ppm         ASTM D5185m         >3         0         0         0         <1           Lead         ppm         ASTM D5185m         >40         <1         <1         0         0 <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>06 Jul 2024</th> <td>29 Mar 2024</td> <td>23 Feb 2024</td>	Sample Date		Client Info		06 Jul 2024	29 Mar 2024	23 Feb 2024
Client Info   Not Changed   Changed   Changed   ABNORMAL   NORMAL   ABNORMAL   ABNORMAL   CONTAMINATION   method   limit/base   current   history2   history2	Machine Age	mls	Client Info		176957	4211	4034
CONTAMINATION   method   militibase   current   history1   history2	Oil Age	mls	Client Info		0	0	4034
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0	Oil Changed		Client Info		Not Changd	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	ABNORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imit/base         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         26         12         67           Chromium         ppm         ASTM D5185m         >20         1         <1	CONTAMINATI	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         1         <1         2           Nickel         ppm         ASTM D5185m         >4         0         0         <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         >4         0         0         <1           Titanium         ppm         ASTM D5185m         0         0         0         <1	Iron	ppm	ASTM D5185m	>100	26	12	67
Titanium         ppm         ASTM D5185m         0         0         <1           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         5         ▲ 33           Lead         ppm         ASTM D5185m         >40         <1	Chromium	ppm	ASTM D5185m	>20	1	<1	2
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         5         ▲ 33           Lead         ppm         ASTM D5185m         >40         <1         <1         0           Copper         ppm         ASTM D5185m         >330         <1         <1         2           Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         0         <1         0         0           Cadmium         ppm         ASTM D5185m         0         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         1         0           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Mangnesium         ppm         ASTM D5185m         1010	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum         ppm         ASTM D5185m         >20         2         5         ▲ 33           Lead         ppm         ASTM D5185m         >40         <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >330         <1         <1         2           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	2	5	<b>▲</b> 33
Tin	Lead	ppm	ASTM D5185m	>40	<1	<1	0
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         5         1         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         1           Magnesium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1	Copper	ppm	ASTM D5185m	>330	<1	<1	2
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         1         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         1           Magnesium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1 <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;15</td> <th>&lt;1</th> <td>0</td> <td>0</td>	Tin	ppm	ASTM D5185m	>15	<1	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         53         62           Manganese         ppm         ASTM D5185m         0         0         0         1           Magnesium         ppm         ASTM D5185m         1010         920         979         1149           Calcium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1150         1058         912         1167           Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         58         53         62           Manganese         ppm         ASTM D5185m         0         0         0         1           Magnesium         ppm         ASTM D5185m         1010         920         979         1149           Calcium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1150         1058         912         1167           Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         >20         <1	Boron	ppm	ASTM D5185m	0	5	1	0
Manganese         ppm         ASTM D5185m         0         0         0         1           Magnesium         ppm         ASTM D5185m         1010         920         979         1149           Calcium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1150         1058         912         1167           Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         >5         0         2           Potassium         ppm         ASTM D5185m         >20         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         920         979         1149           Calcium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1150         1058         912         1167           Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20         <1         5         30           INFRA-RED         method         limit/base         current         history1         history2           Soot %         % ASTM D7844         >3         1.6         0.5         1.8           Nitration         Abs/cm         *ASTM D7415         >30         23.6 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <th>58</th> <td>53</td> <td>62</td>	Molybdenum	ppm	ASTM D5185m	60	58	53	62
Calcium         ppm         ASTM D5185m         1070         1048         1115         1266           Phosphorus         ppm         ASTM D5185m         1150         1058         912         1167           Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	0	0	1
Phosphorus         ppm         ASTM D5185m         1150         1058         912         1167           Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         >25         0         2           Potassium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1010	920	979	1149
Zinc         ppm         ASTM D5185m         1270         1243         1312         1451           Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	1070	1048	1115	1266
Sulfur         ppm         ASTM D5185m         2060         3425         3640         3206           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m	1150	1058	912	1167
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20         <1	Zinc	ppm	ASTM D5185m	1270	1243	1312	1451
Silicon         ppm         ASTM D5185m         >25         8         3         9           Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20         <1         5         30           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.6         0.5         1.8           Nitration         Abs/cm         *ASTM D7624         >20         11.1         7.9         14.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         19.0         26.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.0         15.5         24.3	Sulfur	ppm	ASTM D5185m	2060	3425	3640	3206
Sodium         ppm         ASTM D5185m         5         0         2           Potassium         ppm         ASTM D5185m         >20         <1         5         30           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.6         0.5         1.8           Nitration         Abs/cm         *ASTM D7624         >20         11.1         7.9         14.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         19.0         26.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.0         15.5         24.3	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         5         30           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.6         0.5         1.8           Nitration         Abs/cm         *ASTM D7624         >20         11.1         7.9         14.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         19.0         26.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.0         15.5         24.3	Silicon	ppm	ASTM D5185m	>25	8	3	
INFRA-RED	Sodium	ppm	ASTM D5185m		5	0	2
Soot %         %         *ASTM D7844 >3         1.6         0.5         1.8           Nitration         Abs/cm         *ASTM D7624 >20         11.1         7.9         14.0           Sulfation         Abs/.1mm         *ASTM D7415 >30         23.6         19.0         26.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         18.0         15.5         24.3	Potassium	ppm	ASTM D5185m	>20	<1	5	30
Nitration         Abs/cm         *ASTM D7624         >20         11.1         7.9         14.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         19.0         26.5           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.0         15.5         24.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         19.0         26.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.0         15.5         24.3	Soot %	%	*ASTM D7844	>3	1.6	0.5	1.8
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 15.5 24.3	Nitration	Abs/cm	*ASTM D7624	>20	11.1	7.9	14.0
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.0</b> 15.5 24.3	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.6	19.0	26.5
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.0         8.6         5.9	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.0	15.5	24.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.0	8.6	5.9



# **OIL ANALYSIS REPORT**



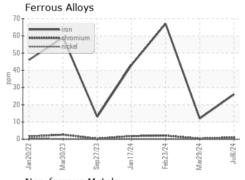


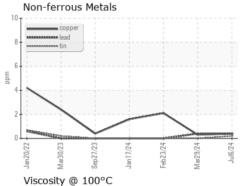


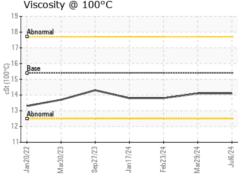
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

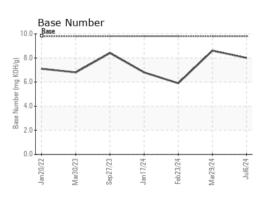
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.1	13.8

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0125184 Lab Number : 06239665

Unique Number : 11128499 Test Package : FLEET

Received : 17 Jul 2024 **Tested** : 18 Jul 2024

Diagnosed : 18 Jul 2024 - Wes Davis

GFL Environmental - 865 - East Mount Hauling

7213 East Mount Houston Road Houston, TX US 77050

Contact: Saul Castillo saul.castillo@gflenv.com

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)

Report Id: GFL865 [WUSCAR] 06239665 (Generated: 07/18/2024 14:43:27) Rev: 1

Submitted By: TECHNICIAN ACCOUNT

T:

F: