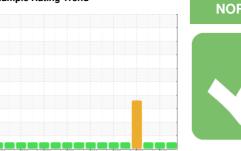


# **OIL ANALYSIS REPORT**

# Sample Rating Trend







# 428039-402371

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

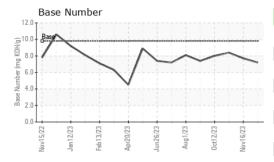
## **Fluid Condition**

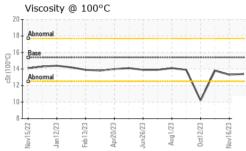
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number   Client Info   GFL0100435   GFL0071668   GFL0094807   Sample Date   Client Info   06 Dec 2023   16 Nov 2023   26 Oct 2023   Machine Age   hrs   Client Info   920   787   640   Oil Age   hrs   Client Info   920   787   640   Oil Changed   Client Info   920   787   640   NORMAL   NORM			107E0EE 0011	023 Feb2023 Apr2023	Jun2023 Aug2023 Oct2023	Nov2023	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   14412   14279   14132	Sample Number		Client Info		GFL0100435	GFL0071668	GFL0094807
Oil Age         hrs         Client Info         920         787         640           Oil Changed         Client Info         N/A         N/A         N/A         Not Changed           Sample Status         NORMAL         NORMAL <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>06 Dec 2023</th> <td>16 Nov 2023</td> <td>26 Oct 2023</td>	Sample Date		Client Info		06 Dec 2023	16 Nov 2023	26 Oct 2023
Cilient Info	Machine Age	hrs	Client Info		14412	14279	14132
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2	Oil Age	hrs	Client Info		920	787	640
Fuel	Oil Changed		Client Info		N/A	N/A	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         Act         NEG         NEG         Act         NEG         NEG         Act         Act         NEG         Act         Act <t< th=""><th>CONTAMINAT</th><th>ION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<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         0         0         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	6	3	3
Nickel	Chromium	ppm	ASTM D5185m	>20	0	0	<1
Titanium	Nickel		ASTM D5185m	>5	0	0	<1
Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >20         1         <1         2           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         <1         <1         0           Tin         ppm         ASTM D5185m         0         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         3         8           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molydenum         ppm         ASTM D5185m         0         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         92	Titanium		ASTM D5185m	>2	0	0	0
Aluminum					0		<1
Lead	Aluminum	• • •	ASTM D5185m	>20	1	<1	2
Copper         ppm         ASTM D5185m         >330         <1         <1         0           Tin         ppm         ASTM D5185m         >15         0         <1	Lead				0	0	
Tin				>330	<1	<1	0
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         3         8           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         0         0           Magnesium         ppm         ASTM D5185m         1070         1011         1049         1076         1076           Phosphorus         ppm         ASTM D5185m         1270         1180         1198         1331	• •						<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         3         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         921         917         973           Calcium         ppm         ASTM D5185m         1070         1011         1049         1076           Phosphorus         ppm         ASTM D5185m         11270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         225         4	Vanadium	• • •					0
Boron	Cadmium		ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         61         62         66           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         921         917         973           Calcium         ppm         ASTM D5185m         1070         1011         1049         1076           Phosphorus         ppm         ASTM D5185m         1150         934         999         1053           Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         >20         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         61         62         66           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         921         917         973           Calcium         ppm         ASTM D5185m         1070         1011         1049         1076           Phosphorus         ppm         ASTM D5185m         1150         934         999         1053           Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           INFRA-RED         method         limit/base         c	Boron	ppm	ASTM D5185m	0	2	3	8
Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         921         917         973           Calcium         ppm         ASTM D5185m         1070         1011         1049         1076           Phosphorus         ppm         ASTM D5185m         1150         934         999         1053           Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         >20         0         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         921         917         973           Calcium         ppm         ASTM D5185m         1070         1011         1049         1076           Phosphorus         ppm         ASTM D5185m         1150         934         999         1053           Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         >20         0         <1	Molybdenum	ppm	ASTM D5185m	60	61	62	66
Calcium         ppm         ASTM D5185m         1070         1011         1049         1076           Phosphorus         ppm         ASTM D5185m         1150         934         999         1053           Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         >20         0         <1	Manganese	ppm	ASTM D5185m	0	0	0	0
Phosphorus         ppm         ASTM D5185m         1150         934         999         1053           Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         >20         0         <1	Magnesium	ppm	ASTM D5185m	1010	921	917	973
Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         >20         0         <1	Calcium	ppm	ASTM D5185m	1070	1011	1049	1076
Zinc         ppm         ASTM D5185m         1270         1180         1198         1331           Sulfur         ppm         ASTM D5185m         2060         2859         2903         3258           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         0         <1	Phosphorus	ppm	ASTM D5185m	1150	934	999	1053
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         0         <1	Zinc	ppm	ASTM D5185m	1270	1180	1198	1331
Silicon         ppm         ASTM D5185m         >25         4         4         6           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         7.8         6.8         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         18.4         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.4         14.5         13.8	Sulfur		ASTM D5185m	2060	2859	2903	3258
Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         0         <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         <1         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         7.8         6.8         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         18.4         17.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.4         14.5         13.8	Silicon	ppm	ASTM D5185m	>25	4	4	6
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         7.8         6.8         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         18.4         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.4         14.5         13.8	Sodium	ppm	ASTM D5185m		3	4	2
Soot %         %         *ASTM D7844 >4         0.3         0.2         0.1           Nitration         Abs/cm         *ASTM D7624 >20         7.8         6.8         5.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.0         18.4         17.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.4         14.5         13.8	Potassium	ppm	ASTM D5185m	>20	0	<1	<1
Nitration         Abs/cm         *ASTM D7624         >20         7.8         6.8         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         18.4         17.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.4         14.5         13.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         18.4         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.4         14.5         13.8	Soot %	%	*ASTM D7844	>4	0.3	0.2	0.1
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         18.4         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.4         14.5         13.8	Nitration	Abs/cm	*ASTM D7624	>20	7.8	6.8	5.5
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.4</b> 14.5 13.8		Abs/.1mm	*ASTM D7415	>30		18.4	
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN)   mg KOH/g   ASTM D2896   9.8   7.2   7.7   8.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.4	14.5	13.8
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.2	7.7	8.4



# **OIL ANALYSIS REPORT**

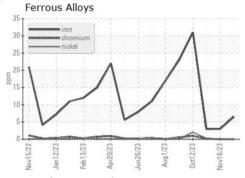


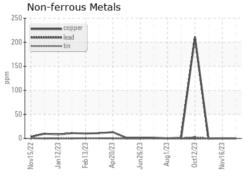


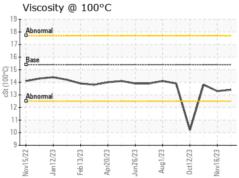
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

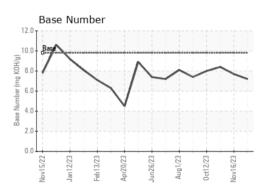
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.3	13.8

# **GRAPHS**













Certificate L2367

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

: GFL0100435 : 06030212

: 10780003

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 11 Dec 2023

: 12 Dec 2023 Diagnosed Diagnostician : Wes Davis

GFL Environmental - 868 - Childersburg Fines Hauling (Alpine)

13737 Plant Rd Childersburg, AL US 35044

Contact: JONATHAN WILLIAMS jonathan.williams@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)

T:

F: