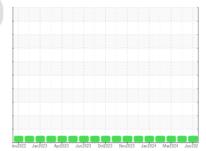


# **OIL ANALYSIS REPORT**

## Sample Rating Trend









Machine Id
429144-19
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

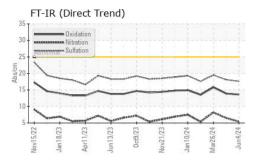
## **Fluid Condition**

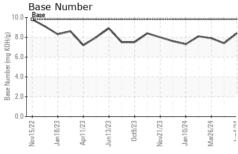
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

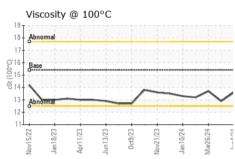
Cample Date	N SHP 15W40 (	GAL)	lov2022 Jan2	023 Apr2023 Jun2023	Oct2023 Nov2023 Jan 2024 Mar.	2024 Jun202	
Cample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Client Info	Sample Number		Client Info		GFL0121225	GFL0118618	GFL0099319
Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         0         600         0           Oil Changed         Client Info         Not Changed         Not			Client Info		04 Jun 2024	30 Apr 2024	26 Mar 2024
Dil Age	•	hrs			0	0	0
CONTAMINATION   method   militibase   current   history1   history2		hrs	Client Info		0	600	0
CONTAMINATION   method   militibase   current   history1   history2			Client Info		Not Changd	Changed	Not Changd
Fuel	Sample Status					NORMAL	
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         4         6         12           Chromium         ppm         ASTM D5185m         >20         <1         0         <1           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >2         0         <1         <1           Aluminum         ppm         ASTM D5185m         >20         1         <1         <1           Lead         ppm         ASTM D5185m         >40         <1         0         <1           Copper         ppm         ASTM D5185m         >15         0         <1         1           Vanadium         ppm         ASTM D5185m         >15         0         <1         1           Cadmium         ppm         ASTM D5185m         0         0	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
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium   ppm   ASTM D5185m   >20	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	4	6	12
Nicke    ppm   ASTM D5185m   >5   0   0   <1	Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Description	Nickel		ASTM D5185m	>5	0	0	<1
Silver	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead	Silver		ASTM D5185m	>2	0	<1	<1
Copper         ppm         ASTM D5185m         >330         <1         0         7           Tin         ppm         ASTM D5185m         >15         0         <1	Aluminum	ppm	ASTM D5185m	>20	1	<1	5
Tin	_ead	ppm	ASTM D5185m	>40	<1	0	<1
Vanadium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         4         4           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         54         55         61           Manganese         ppm         ASTM D5185m         0         <1         <1         1           Magnesium         ppm         ASTM D5185m         1010         910         858         919           Calcium         ppm         ASTM D5185m         1070         1093         1155         1206           Phosphorus         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1	Copper	ppm	ASTM D5185m	>330	<1	0	7
ADDITIVES	Tin	ppm	ASTM D5185m	>15	0	<1	1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         54         55         61           Manganese         ppm         ASTM D5185m         0         <1         <1         1           Magnesium         ppm         ASTM D5185m         1010         910         858         919           Calcium         ppm         ASTM D5185m         1070         1093         1155         1206           Phosphorus         ppm         ASTM D5185m         1150         996         1003         932           Zinc         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         >20         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base	Boron	ppm	ASTM D5185m	0	0	4	4
Manganese         ppm         ASTM D5185m         0         <1         <1         1           Magnesium         ppm         ASTM D5185m         1010         910         858         919           Calcium         ppm         ASTM D5185m         1070         1093         1155         1206           Phosphorus         ppm         ASTM D5185m         1150         996         1003         932           Zinc         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         910         858         919           Calcium         ppm         ASTM D5185m         1070         1093         1155         1206           Phosphorus         ppm         ASTM D5185m         1150         996         1003         932           Zinc         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415 <td< td=""><td>Molybdenum</td><td>ppm</td><td></td><td></td><th>54</th><td>55</td><td>61</td></td<>	Molybdenum	ppm			54	55	61
Calcium         ppm         ASTM D5185m         1070         1093         1155         1206           Phosphorus         ppm         ASTM D5185m         1150         996         1003         932           Zinc         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         >20         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method<	Manganese	ppm	ASTM D5185m	0	<1	<1	1
Phosphorus         ppm         ASTM D5185m         1150         996         1003         932           Zinc         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         lim	Magnesium	ppm	ASTM D5185m	1010	910	858	919
Zinc         ppm         ASTM D5185m         1270         1205         1159         1176           Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414	Calcium	ppm	ASTM D5185m	1070	1093	1155	1206
Sulfur         ppm         ASTM D5185m         2060         3489         3206         2943           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	Phosphorus	ppm	ASTM D5185m	1150	996	1003	932
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	Zinc	ppm	ASTM D5185m	1270	1205	1159	1176
Silicon         ppm         ASTM D5185m         >25         3         3         9           Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	Sulfur	ppm	ASTM D5185m	2060	3489	3206	2943
Sodium         ppm         ASTM D5185m         2         1         0           Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         0         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	Silicon	ppm	ASTM D5185m	>25	3	3	9
INFRA-RED	Sodium	ppm	ASTM D5185m		2	1	0
Soot %         %         *ASTM D7844 >4         0.1         0.2         0.3           Nitration         Abs/cm         *ASTM D7624 >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.6         18.1         19.5           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.6         13.9         15.8	Potassium	ppm	ASTM D5185m	>20	2	0	9
Nitration         Abs/cm         *ASTM D7624         >20         5.4         6.5         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         18.1         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.6         13.9         15.8	Soot %	%	*ASTM D7844	>4	0.1	0.2	0.3
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 13.6 13.9 15.8	Nitration	Abs/cm	*ASTM D7624	>20	5.4	6.5	8.2
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30			19.5
	FLUID DEGRA	OITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.6	13.9	15.8
	Base Number (BN)	mg KOH/g			8.4	7.4	



## **OIL ANALYSIS REPORT**



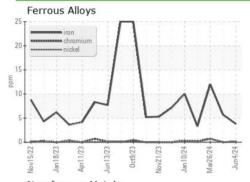


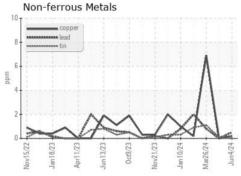


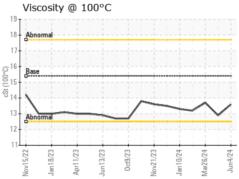
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

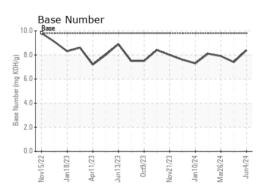
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	12.9	13.7	

## **GRAPHS**













Certificate 12367

Laboratory Sample No. : GFL0121225 Lab Number : 06202489 Unique Number : 11069950

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 07 Jun 2024 **Tested** Diagnosed

: 11 Jun 2024 : 11 Jun 2024 - Wes Davis

GFL Environmental - 846 - Mayfield Hauling

3426 State Route 45 Mayfield, KY US 42066

Contact: Jack Lindsey jack.lindsey@gflenv.com T: (270)970-3690

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)