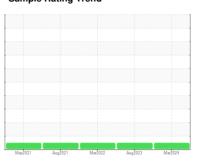


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id 529015 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.

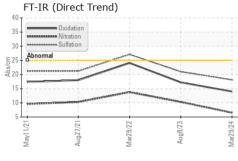
### **Fluid Condition**

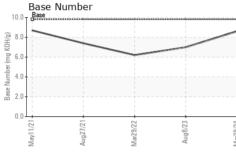
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

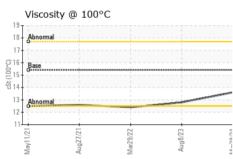
	iAL)		May2021	Aug2021	Mar2022 Aug2023	Mar2024	
Client Info   29 Mar 2024	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   500   6691   6691   6691   6001   6496   6491   6490   64	Sample Number		Client Info		GFL0061034	GFL0030399	GFL0030387
Dil Changed	Sample Date		Client Info		29 Mar 2024	08 Aug 2023	29 Mar 2022
Colic   Changed   Changed   Changed   Changed   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		10640	_	6691
NORMAL   NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2     history2     history2     history2     history3     history3     history3     history3     history3     history3     history3     history3     history4     history4     history4   history4   history4   history4   history4   history4   history4   history4   history4   history4   history4   history4   history4   history5   history	Oil Age	hrs	Client Info		500	600	1369
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
Water	Sample Status				NORMAL	NORMAL	NORMAL
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         11         37         56           Chromium         ppm         ASTM D5185m         >20         <1         1         2           Nickel         ppm         ASTM D5185m         >4         0         <1         0         0           Titanium         ppm         ASTM D5185m         >4         0         <1         <1           Siliver         ppm         ASTM D5185m         >20         2         6         5           Lead         ppm         ASTM D5185m         >20         2         6         5           Lead         ppm         ASTM D5185m         >330         <1         2         2         2           Tin         ppm         ASTM D5185m         >330         <1         2         2         2           Tin         ppm         ASTM D5185m         >3	CONTAMINAT	ΓΙΟΝ	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         11         37         56           Chromium         ppm         ASTM D5185m         >20         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Description	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	_S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>100	11	37	56
Silver	Chromium	ppm	ASTM D5185m	>20	<1	1	2
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	0
December   December	Silver	ppm	ASTM D5185m	>3	0	<1	<1
Copper	Aluminum	ppm	ASTM D5185m	>20	2	6	5
Antimony	_ead	ppm	ASTM D5185m	>40	0	2	6
Antimony   ppm   ASTM D5185m                     Anadium   ppm   ASTM D5185m   0   0   0   0       ADDITIVES   method   limit/base   current   history1   history2       ADDITIVES   method	Copper	ppm	ASTM D5185m	>330	<1	2	2
Anadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         7         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         60         66         67           Manganese         ppm         ASTM D5185m         0         0         <1         <1           Calcium         ppm         ASTM D5185m         1070         1125         1162         1308           Phosphorus         ppm         ASTM D5185m         1270         1324         1245         1409           Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         20         <1         4 <t< td=""><td>- in</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;15</td><th>0</th><td>&lt;1</td><td>1</td></t<>	- in	ppm	ASTM D5185m	>15	0	<1	1
Anadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         7         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         <1         <1           Magnesium         ppm         ASTM D5185m         1010         1016         915         999           Calcium         ppm         ASTM D5185m         1070         1125         1162         1308           Phosphorus         ppm         ASTM D5185m         1270         1324         1245         1409           Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1 <t< td=""><td>Antimony</td><td>ppm</td><td>ASTM D5185m</td><td></td><th></th><td></td><td></td></t<>	Antimony	ppm	ASTM D5185m				
December   December	/anadium		ASTM D5185m		<1	0	0
Soron   ppm   ASTM D5185m   0   2   7   8	Cadmium		ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         60         66         67           Manganese         ppm         ASTM D5185m         0         0         <1	Boron	ppm	ASTM D5185m	0	2	7	8
Molybdenum         ppm         ASTM D5185m         60         60         66         67           Manganese         ppm         ASTM D5185m         0         0         <1	Barium		ASTM D5185m	0	0	0	0
Manganese         ppm         ASTM D5185m         0         0         <1         <1           Magnesium         ppm         ASTM D5185m         1010         1016         915         999           Calcium         ppm         ASTM D5185m         1070         1125         1162         1308           Phosphorus         ppm         ASTM D5185m         1150         1098         1021         1145           Zinc         ppm         ASTM D5185m         1270         1324         1245         1409           Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         6           Godium         ppm         ASTM D5185m         20         <1         4         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3         0.3         0.7         1           Vitration         Abs/cm         *ASTM D7415 <t< td=""><td>Molybdenum</td><td></td><td></td><td></td><th>60</th><td>66</td><td>67</td></t<>	Molybdenum				60	66	67
Magnesium         ppm         ASTM D5185m         1010         1016         915         999           Calcium         ppm         ASTM D5185m         1070         1125         1162         1308           Phosphorus         ppm         ASTM D5185m         1150         1098         1021         1145           Zinc         ppm         ASTM D5185m         1270         1324         1245         1409           Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         6           Godium         ppm         ASTM D5185m         2         <1	-		ASTM D5185m	0	0	<1	<1
Calcium         ppm         ASTM D5185m         1070         1125         1162         1308           Phosphorus         ppm         ASTM D5185m         1150         1098         1021         1145           Zinc         ppm         ASTM D5185m         1270         1324         1245         1409           Gulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Golium         ppm         ASTM D5185m         >25         3         4         6           Goldium         ppm         ASTM D5185m         2         <1	•			1010	1016	915	999
Phosphorus         ppm         ASTM D5185m         1150         1098         1021         1145           Zinc         ppm         ASTM D5185m         1270         1324         1245         1409           Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         6           Sodium         ppm         ASTM D5185m         2         <1				1070	1125	1162	1308
Zinc         ppm         ASTM D5185m         1270         1324         1245         1409           Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         6           Sodium         ppm         ASTM D5185m         2         <1					1098		1145
Sulfur         ppm         ASTM D5185m         2060         3883         3055         2630           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         6           Sodium         ppm         ASTM D5185m         2         <1	•		ASTM D5185m	1270		1245	1409
Solition   ppm   ASTM D5185m   >25   3   4   6	Sulfur						
Sodium	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         2         <1         0           Potassium         ppm         ASTM D5185m         >20         <1         4         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.7         1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         10.3         13.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         21.0         27.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.0         17.2         24.1	Silicon	ppm	ASTM D5185m	>25	3	4	6
Potassium         ppm         ASTM D5185m         >20         <1         4         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.7         1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         10.3         13.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         21.0         27.1           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.0         17.2         24.1	Sodium		ASTM D5185m			<1	0
Soot %         %         *ASTM D7844 >3         0.3         0.7         1           Nitration         Abs/cm         *ASTM D7624 >20         6.5         10.3         13.8           Sulfation         Abs/.1mm         *ASTM D7415 >30         18.1         21.0         27.1           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         14.0         17.2         24.1	Potassium			>20	<1	4	11
Nitration         Abs/cm         *ASTM D7624         >20         6.5         10.3         13.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         21.0         27.1           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.0         17.2         24.1	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         6.5         10.3         13.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         21.0         27.1           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.0         17.2         24.1	Soot %	%	*ASTM D7844	>3	0.3	0.7	1
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.1         21.0         27.1           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.0         17.2         24.1	Nitration	Abs/cm	*ASTM D7624	>20		10.3	13.8
Oxidation							
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.0	17.2	24.1
	Base Number (BN)	mg KOH/a	ASTM D2896	9.8		7	6.2



## **OIL ANALYSIS REPORT**



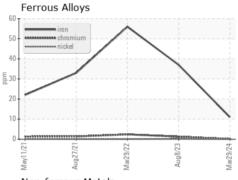


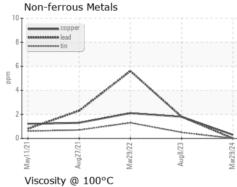


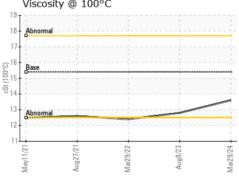
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

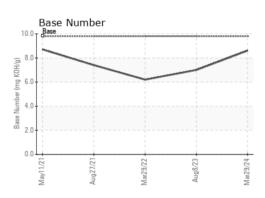
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	12.8	12.4

### **GRAPHS**













Certificate 12367

Laboratory Sample No.

Test Package : FLEET

: GFL0061034 Lab Number : 06138322 Unique Number : 10963130

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 04 Apr 2024 **Tested** 

: 05 Apr 2024 Diagnosed

: 05 Apr 2024 - Wes Davis

GFL Environmental - 633 - Grand Haven

1680 Peach St Whitehall, MI US 49461

Contact: Derek Kater dkater@gflenv.com

T:

\* - 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)

F: