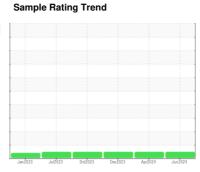


# **OIL ANALYSIS REPORT**

(RB35729) 912057

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

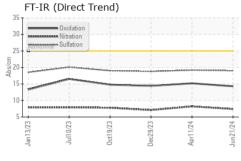
### **Fluid Condition**

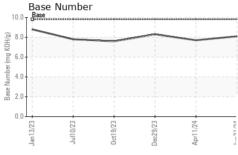
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

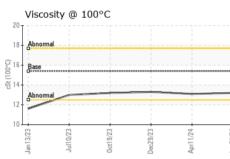
Sample Number   Client Info   GFL0095351   GFL0095363	IAL)		Janzuza	Jui2023 Oct2023	Deczuza Aprzuz4	Jun2024	
Client Info	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   2588   2156   1562   1562   1562   101   1692   1994   1997   1998   1997   1998   19	Sample Number		Client Info		GFL0095351	GFL0095363	GFL0095371
Oil Age         hrs         Client Info         482         594         397           Oil Changed         Client Info         Changed         Changed<	Sample Date		Client Info		21 Jun 2024	11 Apr 2024	29 Dec 2023
Colient Info	Machine Age	hrs	Client Info		2588	2156	1562
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2   NEG   NEG	Oil Age	hrs	Client Info		482	594	397
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imitibase         Current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         10         15         8           Chromium         ppm         ASTM D5185m         >20         <1         0         0           Nickel         ppm         ASTM D5185m         >4         <1         0         0           Silver         ppm         ASTM D5185m         >3         <1         <1         0           Aluminum         ppm         ASTM D5185m         >20         5         8         5           Lead         ppm         ASTM D5185m         >40         0         0         0         0           Copper         ppm         ASTM D5185m         >15         0         <1         <1         <1           Vanadium         ppm         ASTM D5185m         >15         0         <1         <1         <1           Vanadium         ppm         ASTM D5185m         0 <td>CONTAMINA</td> <td>TION</td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	CONTAMINA	TION	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
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAI	LS	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	10	15	8
Description	Chromium	ppm	ASTM D5185m	>20	<1	0	0
Silver	Nickel	ppm	ASTM D5185m	>4	<1	0	0
Aluminum	Titanium	ppm	ASTM D5185m		0	0	0
Lead	Silver	ppm	ASTM D5185m	>3	<1	<1	0
Copper         ppm         ASTM D5185m         >330         2         2         1           Tin         ppm         ASTM D5185m         >15         0         <1	Aluminum	ppm	ASTM D5185m	>20	5	8	5
Tin	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium         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         8         9         5           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         60         60         60         55           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         1028         951         967           Calcium         ppm         ASTM D5185m         1070         1165         1081         1122           Phosphorus         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current	Copper	ppm	ASTM D5185m	>330	2	2	1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         8         9         5           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         60         60         55           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         60         60         55           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         1028         951         967           Calcium         ppm         ASTM D5185m         1070         1165         1081         1122           Phosphorus         ppm         ASTM D5185m         1150         1094         1089         1036           Zinc         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *6 **ASTM D7844         >3	Boron	ppm	ASTM D5185m	0	8	9	5
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         1028         951         967           Calcium         ppm         ASTM D5185m         1070         1165         1081         1122           Phosphorus         ppm         ASTM D5185m         1150         1094         1089         1036           Zinc         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         1028         951         967           Calcium         ppm         ASTM D5185m         1070         1165         1081         1122           Phosphorus         ppm         ASTM D5185m         1150         1094         1089         1036           Zinc         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION         *ASTM D741	Molybdenum	ppm	ASTM D5185m	60	60	60	55
Calcium         ppm         ASTM D5185m         1070         1165         1081         1122           Phosphorus         ppm         ASTM D5185m         1150         1094         1089         1036           Zinc         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus         ppm         ASTM D5185m         1150         1094         1089         1036           Zinc         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Ab	Magnesium	ppm	ASTM D5185m	1010	1028	951	967
Zinc         ppm         ASTM D5185m         1270         1369         1258         1262           Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	Calcium	ppm	ASTM D5185m	1070	1165	1081	1122
Sulfur         ppm         ASTM D5185m         2060         3800         3642         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         1         3         <1	Phosphorus	ppm	ASTM D5185m	1150	1094	1089	1036
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         1         3         <1	Zinc	ppm	ASTM D5185m	1270	1369	1258	1262
Silicon         ppm         ASTM D5185m         >25         4         3         2           Sodium         ppm         ASTM D5185m         1         3         <1           Potassium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	Sulfur	ppm	ASTM D5185m	2060	3800	3642	3201
Sodium         ppm         ASTM D5185m         1         3         <1           Potassium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	CONTAMINAL	NTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         6         9         11           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	Silicon	ppm	ASTM D5185m	>25	4	3	2
INFRA-RED	Sodium	ppm	ASTM D5185m		1	3	<1
Soot %         *ASTM D7844         >3         0.3         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	Potassium	ppm	ASTM D5185m	>20	6	9	11
Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.2         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.0         19.2         18.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.3         15.2         14.4	Soot %	%	*ASTM D7844	>3	0.3	0.3	0.2
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 14.3 15.2 14.4	Nitration	Abs/cm	*ASTM D7624	>20	7.4	8.2	7.1
Oxidation Abs/.1mm *ASTM D7414 >25 <b>14.3</b> 15.2 14.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.0	19.2	18.8
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN)   mg KOH/g   ASTM D2896   9.8   8.1   7.7   8.3	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.3	15.2	14.4
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.1	7.7	8.3



# **OIL ANALYSIS REPORT**



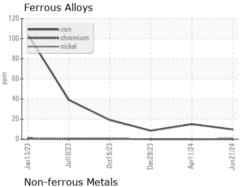


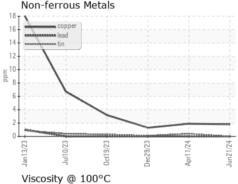


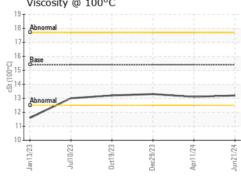
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

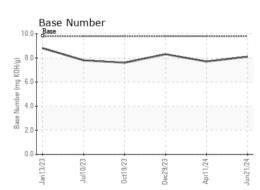
FLUID PROPI	EHILO	method			riistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.1	13.3

## **GRAPHS**













Certificate 12367

Laboratory Sample No. Lab Number : 06222969 Unique Number : 11101166 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0095351

Received **Tested** Diagnosed

: 27 Jun 2024 : 28 Jun 2024 : 28 Jun 2024 - Wes Davis

GFL Environmental - 930 - Mosinee HC

1372 State Highway 34 MOSINEE, WI US 54455

Contact: Kirk Koss

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: (715)571-2784