

# **OIL ANALYSIS REPORT**

## Sample Rating Trend









Machine Id 928027-1155 **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (38 QTS)

# 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

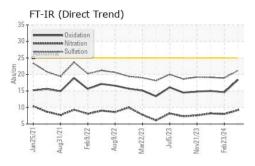
## **Fluid Condition**

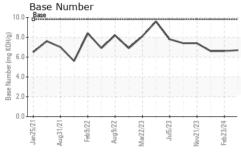
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

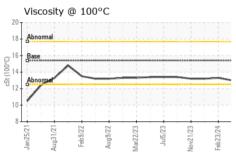
Sample Number	14 0111 1011 40 (0	· · · ,								
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2			
Machine Age   hrs   Client Info   17601   16980   16402	Sample Number		Client Info		GFL0120936	GFL0110278	GFL0102818			
Oil Age         hrs         Client Info         621         592         588           Oil Changed Sample Status         Client Info         Changed Changed Changed Changed Changed Changed Changed Changed Changed NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL         Changed Changed Changed Changed Changed Changed Changed Changed NORMAL NOR	Sample Date		Client Info		30 May 2024	23 Feb 2024	07 Dec 2023			
Oil Changed Sample Status         Client Info         Changed NORMAL         Changed NeG         NoE         Changed NEG         Changed NEG         Changed NEG         Changed NEG         Changed NEG         Changed NEG         Change NEG         Change NEG         Change NEG         Change NEG<	Machine Age	hrs	Client Info		17601	16980	16402			
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2	Oil Age	hrs	Client Info		621	592	588			
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0	Oil Changed		Client Info		Changed	Changed	Changed			
Fuel	Sample Status				NORMAL	NORMAL	NORMAL			
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imit/base         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         23         7         13           Chromium         ppm         ASTM D5185m         >20         <1	CONTAMINAT	TION	method	limit/base	current	history1	history2			
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0			
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         23         7         13           Chromium         ppm         ASTM D5185m         >20         -11         -1         -1           Nickel         ppm         ASTM D5185m         >20         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         0         0         2         0           Copper         ppm         ASTM D5185m         >330         8         2         2         2           Tin         ppm         ASTM D5185m         0         <1	Water		WC Method	>0.2	NEG	NEG	NEG			
Iron	Glycol		WC Method		NEG	NEG	NEG			
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >5         0         0         0           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         6         4         3           Lead         ppm         ASTM D5185m         >20         6         4         3           Lead         ppm         ASTM D5185m         >40         0         2         0           Copper         ppm         ASTM D5185m         >330         8         2         2         2           Tin         ppm         ASTM D5185m         0         <1	WEAR METAL	_S	method	limit/base	current	history1	history2			
Nickel         ppm         ASTM D5185m         >5         0         0         0           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         6         4         3           Lead         ppm         ASTM D5185m         >40         0         2         0           Copper         ppm         ASTM D5185m         >330         8         2         2         2           Tin         ppm         ASTM D5185m         0         <1	Iron	ppm	ASTM D5185m	>120	23	7	13			
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1			
Silver	Nickel	ppm	ASTM D5185m	>5		0	0			
Aluminum	Titanium	ppm	ASTM D5185m	>2	0		0			
Lead         ppm         ASTM D5185m         >40         0         2         0           Copper         ppm         ASTM D5185m         >330         8         2         2           Tin         ppm         ASTM D5185m         >15         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         11018         0         0         0         0	Silver	ppm	ASTM D5185m	>2						
Copper         ppm         ASTM D5185m         >330         8         2         2           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	6		3			
Tin	Lead	ppm	ASTM D5185m	>40	0		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         0         2         3           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         60         60         60         61           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1070         1121         1128         1013           Phosphorus         ppm         ASTM D5185m         1270         1156         1267         1184           Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m	Copper	ppm	ASTM D5185m	>330	8		2			
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         2         3           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	<1	<1	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         60         60         61           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2			
Molybdenum         ppm         ASTM D5185m         60         60         61           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	0	2	3			
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         863         954         888           Calcium         ppm         ASTM D5185m         1070         1121         1128         1013           Phosphorus         ppm         ASTM D5185m         1150         957         1026         955           Zinc         ppm         ASTM D5185m         1270         1156         1267         1184           Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0			
Magnesium         ppm         ASTM D5185m         1010         863         954         888           Calcium         ppm         ASTM D5185m         1070         1121         1128         1013           Phosphorus         ppm         ASTM D5185m         1150         957         1026         955           Zinc         ppm         ASTM D5185m         1270         1156         1267         1184           Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm <td< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>60</td><th>60</th><td>60</td><td>61</td></td<>	Molybdenum	ppm	ASTM D5185m	60	60	60	61			
Calcium         ppm         ASTM D5185m         1070         1121         1128         1013           Phosphorus         ppm         ASTM D5185m         1150         957         1026         955           Zinc         ppm         ASTM D5185m         1270         1156         1267         1184           Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         *ASTM D7414	Manganese	ppm	ASTM D5185m	0	<1	<1	0			
Phosphorus         ppm         ASTM D5185m         1150         957         1026         955           Zinc         ppm         ASTM D5185m         1270         1156         1267         1184           Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.	Magnesium	ppm	ASTM D5185m	1010	863	954	888			
Zinc         ppm         ASTM D5185m         1270         1156         1267         1184           Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Calcium	ppm	ASTM D5185m	1070	1121	1128	1013			
Sulfur         ppm         ASTM D5185m         2060         2952         2779         2751           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         16         6         4           Potassium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Phosphorus	ppm	ASTM D5185m	1150	957	1026	955			
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         16         6         4           Potassium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Zinc	ppm	ASTM D5185m	1270	1156	1267	1184			
Silicon         ppm         ASTM D5185m         >25         0         5         5           Sodium         ppm         ASTM D5185m         16         6         4           Potassium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0			ASTM D5185m	2060	2952	2779	2751			
Sodium         ppm         ASTM D5185m         16         6         4           Potassium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	CONTAMINAN	NTS	method	limit/base	current	history1	history2			
Potassium         ppm         ASTM D5185m         >20         9         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Silicon	ppm	ASTM D5185m	>25	0		5			
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Sodium	ppm	ASTM D5185m		16	6	4			
Soot %         %         *ASTM D7844         >4         0.4         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Potassium	ppm	ASTM D5185m	>20	9	3	2			
Nitration         Abs/cm         *ASTM D7624         >20         9.2         8.0         8.2           Sulfation         Abs/.1mm         *ASTM D7615         >30         21.2         18.9         19.1           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	INFRA-RED		method	limit/base	current	history1	history2			
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         18.9         19.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.4         14.6         15.0	Soot %	%	*ASTM D7844	>4	0.4	0.3	0.3			
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.4 14.6 15.0	Nitration	Abs/cm	*ASTM D7624	>20	9.2	8.0	8.2			
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.4</b> 14.6 15.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2	18.9	19.1			
	FLUID DEGRADATION method limit/base current history1 history2									
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.4	14.6	15.0			
		mg KOH/g			6.7	6.6	6.6			

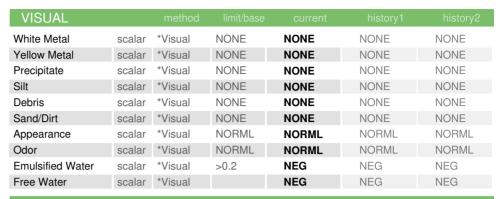


# **OIL ANALYSIS REPORT**



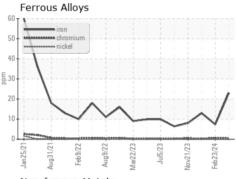


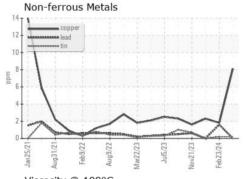


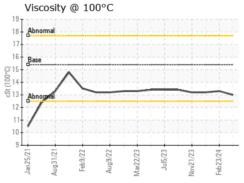


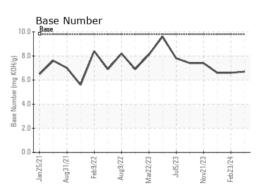
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.0	13.3	13.2

### **GRAPHS**













Certificate 12367

Laboratory Sample No.

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0120936 Lab Number : 06198879 Unique Number : 11061002

Received : 04 Jun 2024 **Tested** Diagnosed

: 05 Jun 2024 : 05 Jun 2024 - Wes Davis

GFL Environmental - 622 - Traverse City Hauling 160 Hughes Dr Traverse City, MI

> US 49686 Contact: GARY BREWER

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: GFL622 [WUSCAR] 06198879 (Generated: 06/05/2024 04:37:54) Rev: 1

Submitted By: TECHNICIAN ACCOUNT

T:

F: