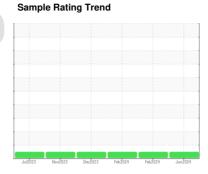


# **OIL ANALYSIS REPORT**



(BD38669) 413031 Diesel Engine

PETRO CANADA DURON SHP 15W40 (33 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

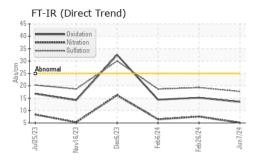
### **Fluid Condition**

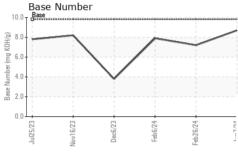
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

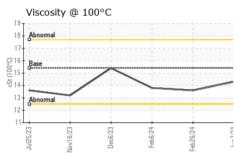
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         2         12         8           Chromium         ppm         ASTM D5185m         >20         0         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >2         0         0         <1         0           Aluminum         ppm         ASTM D5185m         >2         0         0         <1         0           Aluminum         ppm         ASTM D5185m         >20         2         2         3           Lead         ppm         ASTM D5185m         >20         2         2         3           Lead         ppm         ASTM D5185m         0         <1         0           Copper         ppm         ASTM D5185m         0         <1         0           Cadium         ppm         ASTM D5185m         0         <5         3 <t< th=""><th>SAMPLE INFORM</th><th>ATION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2	
Machine Age   hrs   Client Info   0   3018   2849	Sample Number		Client Info		GFL0114385	GFL0114399	GFL0110131	
Oil Age         hrs         Client Info         Not Changed         Not C	Sample Date		Client Info		07 Jun 2024	26 Feb 2024	06 Feb 2024	
Oil Age         hrs         Client Info         Not Changed         Not C		hrs	Client Info		0	3018	2849	
Client Info   Not Changed   Normal   Normal	J.	hrs	Client Info		0	3018	0	
NORMAL   NORMAL   NORMAL	-		Client Info		Not Changd	Changed	Not Changd	
Fuel	-				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         >120         2         12         8           Chromium         ppm         ASTM D5185m         >20         0         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >20         2         2         3           Lead         ppm         ASTM D5185m         >40         0         <1         0           Copper         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         0         0           Cadmium         ppm         ASTM D5185m         0         5         3         4	CONTAMINATIO	NC	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         2         12         8           Chromium         ppm         ASTM D5185m         >20         0         <1	Water		WC Method	>0.2	NEG	NEG	NEG	
Irron	Glycol		WC Method		NEG	NEG	NEG	
Chromium         ppm         ASTM D5185n         >20         0         <1	WEAR METALS		method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>120	2	12	8	
Description   Description	Chromium	ppm	ASTM D5185m	>20	0	<1	<1	
Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         <1	Nickel	ppm	ASTM D5185m	>5	<1	2	<1	
Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >20         2         2         3           Lead         ppm         ASTM D5185m         >40         0         <1         0           Copper         ppm         ASTM D5185m         >330         1         7         6           Tin         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         5         3         4           Barium         ppm         ASTM D5185m         0         5         6         60         56			ASTM D5185m	>2	0	0	0	
Aluminum			ASTM D5185m	>2	0	0	<1	
Lead			ASTM D5185m	>20	2	2		
Copper         ppm         ASTM D5185m         >330         1         7         6           Tin         ppm         ASTM D5185m         >15         0         <1			ASTM D5185m	>40	0	<1	0	
Tin			ASTM D5185m	>330	1	7	6	
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         3         4           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         56         60         56           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         915         1117         902           Calcium         ppm         ASTM D5185m         1070         1049         1142         1042           Phosphorus         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1						<1		
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         3         4           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         -1         -1         -1           Magnesium         ppm         ASTM D5185m         0         -1         -1         -1           Magnesium         ppm         ASTM D5185m         1070         1049         1246         1021           Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         3			ASTM D5185m			<1	0	
Boron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0   0								
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         56         60         56           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         915         1117         902           Calcium         ppm         ASTM D5185m         1070         1049         1246         1021           Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         20         3         5         3           INFRA-RED         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         60         56         60         56           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         915         1117         902           Calcium         ppm         ASTM D5185m         1070         1049         1246         1021           Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >	Boron	ppm	ASTM D5185m	0	5	3	4	
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         915         1117         902           Calcium         ppm         ASTM D5185m         1070         1049         1246         1021           Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         >20         3         5         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	0	0	0	
Magnesium         ppm         ASTM D5185m         1010         915         1117         902           Calcium         ppm         ASTM D5185m         1070         1049         1246         1021           Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         22         3         3           Sodium         ppm         ASTM D5185m         20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	56	60	56	
Calcium         ppm         ASTM D5185m         1070         1049         1246         1021           Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION         method			ASTM D5185m	0	<1	<1	<1	
Phosphorus         ppm         ASTM D5185m         1150         1049         1142         1042           Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION         method         l	Magnesium	ppm	ASTM D5185m	1010	915	1117	902	
Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D74	Calcium	ppm	ASTM D5185m	1070	1049	1246	1021	
Zinc         ppm         ASTM D5185m         1270         1234         1499         1220           Sulfur         ppm         ASTM D5185m         2060         3633         3491         2949           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D74	Phosphorus	ppm	ASTM D5185m	1150	1049	1142	1042	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4			ASTM D5185m	1270	1234	1499	1220	
Silicon         ppm         ASTM D5185m         >25         9         4         3           Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4	Sulfur	ppm	ASTM D5185m	2060	3633	3491	2949	
Sodium         ppm         ASTM D5185m         2         3         3           Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4								
Potassium         ppm         ASTM D5185m         >20         3         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4	Silicon	ppm	ASTM D5185m	>25	9	4	3	
INFRA-RED	Sodium	ppm	ASTM D5185m		2	3	3	
Soot %         %         *ASTM D7844 >4         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624 >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.5         15.2         14.4	Potassium	ppm	ASTM D5185m	>20	3	5	3	
Nitration         Abs/cm         *ASTM D7624         >20         5.1         7.6         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4	Soot %	%	*ASTM D7844	>4	0.1	0.3	0.2	
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         19.3         18.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         15.2         14.4	Nitration	Abs/cm	*ASTM D7624	>20	5.1	7.6	6.5	
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.5</b> 15.2 14.4								
	FLUID DEGRADATION method limit/base current history1 history2							
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	15.2	14.4	
					8.7	7.2	7.9	



# **OIL ANALYSIS REPORT**



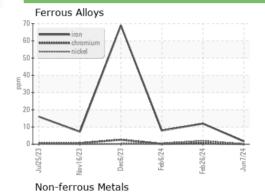


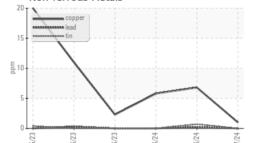


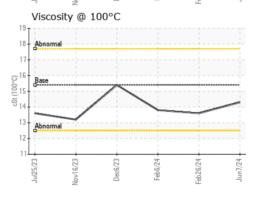
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

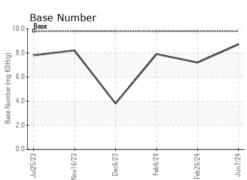
FLUID PROPI	ERIIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	13.6	13.8

## **GRAPHS**













Certificate 12367

Laboratory Sample No. Lab Number : 06212815 Unique Number : 11085679

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0114385

Received **Tested** 

: 17 Jun 2024 : 19 Jun 2024 Diagnosed : 19 Jun 2024 - Wes Davis

GFL Environmental - 468 - Dearborn 3051 Schaefer Rd

Dearborn, MI US 48126 Contact:

T:

F:

Test Package : FLEET 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: GFL468 [WUSCAR] 06212815 (Generated: 06/21/2024 22:11:05) Rev: 1

Submitted By: seel also GFL468 - Laura Wilson