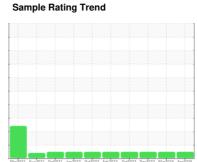


# **OIL ANALYSIS REPORT**









Machine Id 4642M Component

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

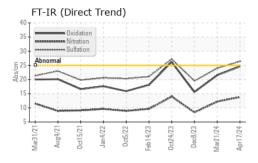
### **Fluid Condition**

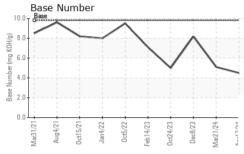
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

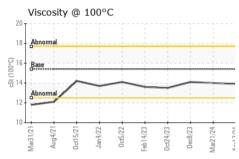
Sample Date   Client Info   17 Apr 2024   21 Mar 2024   08 Dec 202	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         15149         14944         14093           Oil Age         hrs         Client Info         14093         0         13145           Oil Changed         Client Info         Changed         Not Changed         Changed           Sample Status         NorMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history1           Fuel         WC Method         >3.0         <1.0	Sample Number		Client Info		GFL0117592	GFL0108732	GFL0105674
Oil Age         hrs         Client Info         14093         0         13145           Oil Changed Sample Status         Client Info         Changed NoRMAL         Not Changed NoRMAL         Not Changed NoRMAL         NoRMAL NORMAL         NoRMAL NORMAL           CONTAMINATION         method         limit/base         current         history1         history1           Fuel         WC Method         3.0         < 1.0	Sample Date		Client Info		17 Apr 2024	21 Mar 2024	08 Dec 2023
Oil Changed Sample Status         Client Info MoRMAL         Changed NORMAL         Not Changed NORMAL         Changed NeG         Changed NeG         Changed NeG         Changed NEG         Changed NEG         Change NEG         Change NEG <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>15149</th> <th>14944</th> <th>14093</th>	Machine Age	hrs	Client Info		15149	14944	14093
Sample Status	Oil Age	hrs	Client Info		14093	0	13145
CONTAMINATION         method         limit/base         current         history1         history1           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >90         43         29         11           Chromium         ppm         ASTM D5185m         >20         2         1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Lead         ppm         ASTM D5185m         >20         4         3         1           Lead         ppm         ASTM D5185m         >330         3         1         0           Copper         ppm         ASTM D5185m         >330         3 <td< th=""><th>Oil Changed</th><th></th><th>Client Info</th><th></th><th>Changed</th><th>Not Changd</th><th>Changed</th></td<>	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG	CONTAMINATI	ON	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
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         2         1         <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         >2         0         2         0           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         3         1           Lead         ppm         ASTM D5185m         >40         0         0         <1	Iron	ppm	ASTM D5185m	>90	43	29	11
Nickel         ppm         ASTM D5185m         >2         0         2         0           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         3         1           Lead         ppm         ASTM D5185m         >40         0         0         <1	Chromium	ppm	ASTM D5185m	>20	2	1	<1
Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         3         1           Lead         ppm         ASTM D5185m         >40         0         0         <1	Nickel			>2	0	2	0
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         3         1           Lead         ppm         ASTM D5185m         >40         0         0         <1           Copper         ppm         ASTM D5185m         >330         3         1         0           Tin         ppm         ASTM D5185m         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         0         0           Molydenum         ppm         ASTM D5185m         0         2         0         0     <	Titanium		ASTM D5185m	>2	0	0	0
Aluminum	Silver		ASTM D5185m	>2	0	0	0
Lead         ppm         ASTM D5185m         >40         0         0         <1           Copper         ppm         ASTM D5185m         >330         3         1         0           Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         2         <1         <1           Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         0         0           Molybdenum         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205	Aluminum		ASTM D5185m	>20	4	3	1
Copper         ppm         ASTM D5185m         >330         3         1         0           Tin         ppm         ASTM D5185m         >15         <1	Lead				0		<1
Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         0         0           Molybdenum         ppm         ASTM D5185m         0         2         0         0           Manganese         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146	Copper		ASTM D5185m	>330	3	1	0
Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         0         0           Molybdenum         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current					<1	0	0
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history           Boron         ppm         ASTM D5185m         0         2         <1	Vanadium		ASTM D5185m		0		0
Boron					-		
Barium         ppm         ASTM D5185m         0         2         0         0           Molybdenum         ppm         ASTM D5185m         60         61         60         52           Manganese         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         10         6         3           Potassium         ppm         ASTM D5185m         20	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         61         60         52           Manganese         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844	Boron	ppm	ASTM D5185m	0	2	<1	<1
Manganese         ppm         ASTM D5185m         0         2         0         0           Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         *ASTM D7414	Barium		ASTM D5185m	0	2	0	0
Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION	Molybdenum	ppm	ASTM D5185m	60	61	60	52
Magnesium         ppm         ASTM D5185m         1010         958         998         976           Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         *	•		ASTM D5185m	0	2	0	0
Calcium         ppm         ASTM D5185m         1070         1111         1205         1072           Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         "ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         "ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         "ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method	-				958	998	976
Phosphorus         ppm         ASTM D5185m         1150         1073         1055         1041           Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         "ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         "ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         "ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         <	-		ASTM D5185m	1070	1111	1205	1072
Zinc         ppm         ASTM D5185m         1270         1274         1315         1228           Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6	Phosphorus		ASTM D5185m	1150	1073	1055	1041
Sulfur         ppm         ASTM D5185m         2060         3146         3378         3026           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         10         6         3           Potassium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6			ASTM D5185m	1270	1274	1315	1228
Silicon         ppm         ASTM D5185m         >25         6         4         3           Sodium         ppm         ASTM D5185m         10         6         3           Potassium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION method limit/base current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6	Sulfur		ASTM D5185m	2060	3146	3378	3026
Sodium         ppm         ASTM D5185m         10         6         3           Potassium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         10         6         3           Potassium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6	Silicon	ppm	ASTM D5185m	>25	6	4	3
Potassium         ppm         ASTM D5185m         >20         0         0         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6		• •					
Soot %         %         *ASTM D7844 >6         1.3         1.2         0.5           Nitration         Abs/cm         *ASTM D7624 >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415 >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history         history           Oxidation         Abs/.1mm         *ASTM D7414 >25         24.6         21.5         15.6				>20			0
Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         13.8         12.2         8.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6	Soot %	%	*ASTM D7844	>6	1.3	1.2	0.5
Sulfation         Abs/.1mm         *ASTM D7415         >30         26.4         24.0         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.6         21.5         15.6			*ASTM D7624				
Oxidation Abs/.1mm *ASTM D7414 >25 <b>24.6</b> 21.5 15.6							
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	24.6	21.5	15.6
	Base Number (BN)	mg KOH/g			4.5	5.1	8.2



## **OIL ANALYSIS REPORT**



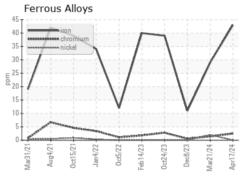




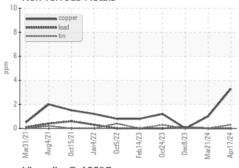
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

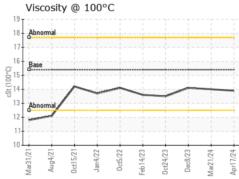
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.0	14.1	

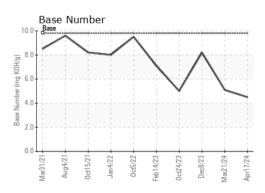
### **GRAPHS**



#### Non-ferrous Metals











Certificate 12367

Laboratory Sample No.

: GFL0117592 Lab Number : 06155744 Unique Number : 10991167 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 22 Apr 2024

**Tested** : 23 Apr 2024 Diagnosed : 23 Apr 2024 - Wes Davis

GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak

fwolak@gflenv.com T: (586)825-9514

\* - 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)

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