

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend

## NORMAL





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Sample Number Client Info GFL0092103 GFL0084635 GFL00784735   Sample Date Client Info 15 Dec 2023 18 Oct 2023 28 Apr 202   Machine Age hrs Client Info 15244 119131 110444   Oil Age hrs Client Info 600 0 0   Oil Age NS Client Info Changed Changed Changed   Sample Status Imethod Imit/base current history1 history1   Fuel WC Method >0 <1.0 <1.0 <1.0   Water WC Method >0 NEG NEG NEG   Water WC Method >0 0 0 0   Nickel ppm ASTM 05185m >100 4 4 9   Chromnium ppm ASTM 05185m >20 <1 0 0   Nickel ppm ASTM 05185m >20 1 <1 0   Chromnium ppm ASTM 051							
Sample Date Client Info 15 Dec 2023 18 Oct 2023 28 Apr 202   Machine Age hrs Client Info 15244 119131 110444   Oil Age hrs Client Info 600 0 0   Oil Changed Client Info Changed NORMAL	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history
Machine Age hrs Client Info 15244 119131 110444   Oil Age hrs Client Info 600 0 0   Oil Changed Client Info 000 0 0 0   Sample Status Imit/base current NORMAL NORMAL NORMAL   CONTAMINATION method Imit/base current Nistory Nistory   Fuel WC Method >0.2 NEG NEG NEG   Water WC Method >0.2 NEG NEG NEG   Mixel WC Method >0.2 NEG NEG NEG   WEAR METALS method Imit/base current history1 nistory1   Iron<	Sample Number		Client Info		GFL0092103	GFL0084635	GFL007819
Oil Age hrs Client Info 600 0 0   Oil Changed Client Info Changed NORMAL	Sample Date		Client Info		15 Dec 2023	18 Oct 2023	28 Apr 202
Oil Changed Sample Status Client Info Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL   CONTAMINATION method limit/base current history1 history1   Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0   Water WC Method >5 <1.0 <1.0 <1.0 <1.0   Water WC Method >5 <1.0 <1.0 <1.0 <1.0   Wear WC Method >5 <1.0 <1.0 <1.0 <1.0   WEAR METALS method limit/base current history1 history1   Iron ppm ASTM D5185m >100 4 4 9   Chromium ppm ASTM D5185m >20 1 <1 1   Iron ppm ASTM D5185m >30 0 0 0   Silver ppm ASTM D5185m >10 0 0 0   Irin ppm ASTM D5185m <td>Machine Age</td> <td>hrs</td> <td>Client Info</td> <td></td> <th>15244</th> <td>119131</td> <td>110444</td>	Machine Age	hrs	Client Info		15244	119131	110444
Sample Status NORMAL NORMAL NORMAL NORMAL   CONTAMINATION method Imit/base current history1 history1   Fuel WC Method >5 <1.0	Oil Age	hrs	Client Info		600	0	0
Sample Status NORMAL NORMAL NORMAL NORMAL   CONTAMINATION method limit/base current history1 history1   Fuel WC Method >5 <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0   Water WC Method >0.2 NEG NEG NEG   Glycol WC Method NEG NEG NEG NEG   WEAR METALS method limit/base current history1 history1   Iron ppm ASTM D5185m >100 4 4 9   Chromium ppm ASTM D5185m >20 <1	Sample Status				-	NORMAL	
Water WC Method >0.2 NEG NEG NEG NEG   Glycol WC Method Imil/base current history1 history1   Iron ppm ASTM D5185m >100 4 4 9   Chromium ppm ASTM D5185m >20 <1	CONTAMINA	ΓΙΟΝ	method	limit/base	current	history1	history
Glycol WC Method NEG NEG NEG NEG   WEAR METALS method limit/base current history1 history1   Iron ppm ASTM D5185m >20 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history1   Iron ppm ASTM D5185m >100 4 4 9   Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185m >100 4 4 9   Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 0 0   Nickel ppm ASTM D5185m >4 0 0 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 1 <1	WEAR METAL	_S	method	limit/base	current	history1	history
Chromium ppm ASTM D5185m >20 <1 0 0   Nickel ppm ASTM D5185m >4 0 0 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 1 <1	Iron	maa	ASTM D5185m	>100	4	4	9
Nickel ppm ASTM D5185m >4 0 0 0   Titanium ppm ASTM D5185m >3 0 0 0   Silver ppm ASTM D5185m >20 1 <1	Chromium		ASTM D5185m	>20	<1	0	
Titanium ppm ASTM D5185m 0 0 0 0   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 1 <1							
Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >20 1 <1							
Atuminum ppm ASTM D5185m >20 1 <1 1   Lead ppm ASTM D5185m >40 1 <1				>3	-		
Lead ppm ASTM D5185m >40 1 <1 0   Copper ppm ASTM D5185m >330 <1					-		
Copper ppm ASTM D5185m >330 <1 <1 0   Tin ppm ASTM D5185m >15 0 0 0   Vanadium ppm ASTM D5185m  <1							
Tin ppm ASTM D5185m >15 0 0 0   Vanadium ppm ASTM D5185m <1							
Vanadium ppm ASTM D5185m <1 0 0   Cadmium ppm ASTM D5185m 0 0 0 0   ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 13 10 21   Barium ppm ASTM D5185m 0 0 0 0 0 0   Barium ppm ASTM D5185m 0 0 0 0 0 0 0   Manganese ppm ASTM D5185m 0 0 0 <1 <1 <1   Magnesium ppm ASTM D5185m 1010 539 531 596    Calcium ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578<							
Cadmium ppm ASTM D5185m 0 0 0   ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 13 10 21   Barium ppm ASTM D5185m 0 0 0 0   Malganese ppm ASTM D5185m 60 51 48 51   Magnesium ppm ASTM D5185m 0 0 -1 -1   Magnesium ppm ASTM D5185m 1010 539 531 596   Calcium ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history1   Solicon ppm ASTM D5185m >20 <1				210			
ADDITIVES method limit/base current history1 history   Boron ppm ASTM D5185n 0 13 10 21   Barium ppm ASTM D5185n 0 0 0 0   Molybdenum ppm ASTM D5185n 60 51 48 51   Manganese ppm ASTM D5185n 0 0 -1 <1							
Boron ppm ASTM D5185m 0 13 10 21   Barium ppm ASTM D5185m 0 0 0 0 0   Molybdenum ppm ASTM D5185m 60 51 48 51   Manganese ppm ASTM D5185m 0 0 <1 <1   Magnesium ppm ASTM D5185m 1010 539 531 596   Calcium ppm ASTM D5185m 1010 539 531 596   Calcium ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history1   Sodium ppm ASTM D5		pp		limit/base	-	-	
Barium ppm ASTM D5185m 0 0 0 0 0   Molybdenum ppm ASTM D5185m 60 51 48 51   Manganese ppm ASTM D5185m 0 0 <1		maa					
Molybdenum ppm ASTM D5185m 60 51 48 51   Manganese ppm ASTM D5185m 0 0 <1				·	-		
Manganese ppm ASTM D5185m 0 0 <1 <1   Magnesium ppm ASTM D5185m 1010 539 531 596   Calcium ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1070 955 871 985   Sulfur ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history   Silicon ppm ASTM D5185m >20 <1					-		
Magnesium ppm ASTM D5185m 1010 539 531 596   Calcium ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1070 955 871 985   Zinc ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history1   Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 <1 2 <1   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7624 >3 0 0 0   Soot % % *ASTM D7624 <t< td=""><td>-</td><td></td><td></td><td></td><th>-</th><td></td><td></td></t<>	-				-		
Calcium ppm ASTM D5185m 1070 1521 1488 1660   Phosphorus ppm ASTM D5185m 1150 686 630 740   Zinc ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history   Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 <1	-				-		
Phosphorus ppm ASTM D5185m 1150 686 630 740   Zinc ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 1270 955 871 985   CONTAMINANTS method limit/base current history1 history   Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 <1 2 <1   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >3 0 0 0   Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.tmm *ASTM D7415 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base	-						
Zinc ppm ASTM D5185m 1270 955 871 985   Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history   Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 <1					-		
Sulfur ppm ASTM D5185m 2060 2402 2184 2578   CONTAMINANTS method limit/base current history1 history   Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 <1 2 <1   Potassium ppm ASTM D5185m >20 <1 2 <1   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >3 0 0 0   Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.1mm *ASTM D7624 >20 10.0 9.7 8.7   FLUID DEGRADATION method limit/base current history1 history1   Oxidation Abs/.1mm *ASTM D7414							
CONTAMINANTS method limit/base current history1 history   Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 <1	-						
Silicon ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >25 3 3 4   Sodium ppm ASTM D5185m >20 5 7 5   Potassium ppm ASTM D5185m >20 <1 2 <1   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >3 0 0 0   Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.1mm *ASTM D7415 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base current history1 history1   Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4					-		
Sodium ppm ASTM D5185m 5 7 5   Potassium ppm ASTM D5185m<>20 <1							
Potassium ppm ASTM D5185m >20 <1 2 <1   INFRA-RED method limit/base current history1 history   Soot % % *ASTM D7844 >3 0 0 0   Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.1mm *ASTM D7415 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base current history1 history1   Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4				-			
Soot % % *ASTM D7844 >3 0 0 0   Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.1mm *ASTM D7415 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base current history1 history   Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4				>20			
Soot % % *ASTM D7844 >3 0 0 0   Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.1mm *ASTM D7415 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base current history1 history   Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4						history1	
Nitration Abs/cm *ASTM D7624 >20 10.0 9.7 8.7   Sulfation Abs/.1mm *ASTM D7615 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base current history1 history   Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4		%					
Sulfation Abs/.1mm *ASTM D7415 >30 19.6 19.6 18.5   FLUID DEGRADATION method limit/base current history1 history   Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4							
Oxidation Abs/.1mm *ASTM D7414 >25 17.3 17.0 16.4							
	FLUID DEGRA	.DAT <u>IO</u> N	method	limit/base	current	history1	history
				>25	17.3		
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	5.7	5.2	5.7

# Machine Id 749008-310062

#### Component **Diesel Engine**

Fluic PETRO CANADA DURON SHP 15W40 (--- GAL)

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

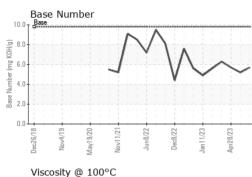
There is no indication of any contamination in the oil.

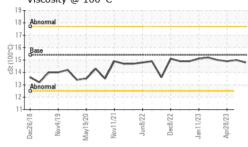
## Fluid Condition

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

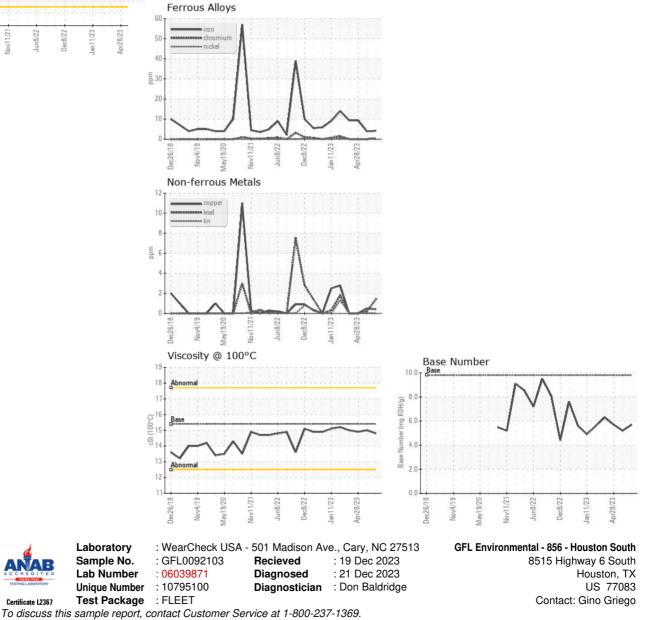


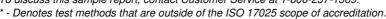
# **OIL ANALYSIS REPORT**





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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.8	15.0	14.9
GRAPHS						





Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367