

# **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 913148

# Component Diesel Engine

Fluid 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.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086344	GFL0086341	GFL0078700
Sample Date		Client Info		09 Oct 2023	19 Sep 2023	31 Aug 2023
Machine Age	hrs	Client Info		1925	1773	1635
Oil Age	hrs	Client Info		700	548	0
Oil Changed		Client Info		Not Changd	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	18	6	58
Chromium	ppm	ASTM D5185m	>4	4	0	1
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m	-	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>25	17	<1	31
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	40	1	20
Tin		ASTM D5185m	>4	+0 <1	0	<1
Vanadium	ppm ppm	ASTM D5185m	>4	<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ррш			Ū	-	-
ADDITIVES		method	limit/base	current	history1	history2
	ppm		0	90	4	24
Barium	ppm	ASTM D5185m	0	0	0	0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 114	0 58	0 75
Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 114 <1	0 58 0	0 75 2
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 114 <1 1216	0 58 0 945	0 75 2 749
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 114 <1	0 58 0	0 75 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 114 <1 1216	0 58 0 945	0 75 2 749
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 114 <1 1216 1651	0 58 0 945 1061	0 75 2 749 1329
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 114 <1 1216 1651 1248	0 58 0 945 1061 938	0 75 2 749 1329 832
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270	0 114 <1 1216 1651 1248 1641	0 58 0 945 1061 938 1208	0 75 2 749 1329 832 1078
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base	0 114 <1 1216 1651 1248 1641 4982	0 58 0 945 1061 938 1208 2785	0 75 2 749 1329 832 1078 3209
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base	0 114 <1 1216 1651 1248 1641 4982 current	0 58 0 945 1061 938 1208 2785 history1	0 75 2 749 1329 832 1078 3209 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Limit/base >30	0 114 <1 1216 1651 1248 1641 4982 current 6	0 58 0 945 1061 938 1208 2785 history1 3	0 75 2 749 1329 832 1078 3209 history2 10
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Limit/base >30	0 114 <1 1216 1651 1248 1641 4982 current 6 4	0 58 0 945 1061 938 1208 2785 history1 3 1	0 75 2 749 1329 832 1078 3209 history2 10 2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30	0 114 <1 1216 1651 1248 1641 4982 current 6 4 6	0 58 0 945 1061 938 1208 2785 history1 3 1 4	0 75 2 749 1329 832 1078 3209 history2 10 2 53
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >20 <i>limit/base</i>	0 114 <1 1216 1651 1248 1641 4982 current 6 4 6 4 6	0 58 0 945 1061 938 1208 2785 history1 3 1 4 history1	0 75 2 749 1329 832 1078 3209 history2 10 2 53 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 <i>limit/base</i> >30	0 114 <1 1216 1651 1248 1641 4982 current 6 4 6 4 6 current 0.5	0 58 0 945 1061 938 1208 2785 history1 3 1 4 <i>history1</i> 0.4	0 75 2 749 1329 832 1078 3209 history2 10 2 53 53 history2 0.6
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 <i>limit/base</i> >30 >20 <i>limit/base</i> >33	0 114 <1 1216 1651 1248 1641 4982 <u>current</u> 6 4 6 <u>current</u> 0.5 7.3	0 58 0 945 1061 938 1208 2785 history1 3 1 4 <i>history1</i> 0.4 7.7	0 75 2 749 1329 832 1078 3209 history2 10 2 53 history2 0.6 10.5
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 <i>s</i> 20 <i>limit/base</i> >3 >20 <i>s</i> 3 >20	0 114 <1 1216 1651 1248 1641 4982 current 6 4 6 4 6 20.5 7.3 20.4	0 58 0 945 1061 938 1208 2785 history1 3 1 4 4 history1 0.4 7.7 19.8	0 75 2 749 1329 832 1078 3209 history2 10 2 53 history2 0.6 10.5 23.5

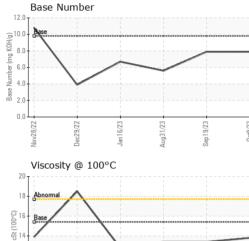


Ab 12 10

Nov28/22

Dec29/22

# **OIL ANALYSIS REPORT**



Jan16/23

Aug31/23

Sep19/23

18

12 11-

Laboratory

Sample No.

Lab Number

Nov28/22

: GFL0086344

: 05981844

Dec29/22

Jan 16/23

St (100°C) 16

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	13.8	13.4	13.4
GRAPHS						
Ferrous Alloys						
iron						
chromium						
D - mickel						
	-					
-		1				
Nov28/22 - Dec29/22 - Jan16/23 -	Aug31/23 -	Sep19/23	0ct9/23 -			
Dec	Aug	Sep	00			
Non-ferrous Metal	S					
copper						
lead						
$  / \wedge \rangle$			1			
		> /				
		<u> </u>	2			
Nov28/22 Dec29/22	Aug31/23	Sep19/23	0ct9/23			
778-2 Service 10		Se				
Viscosity @ 100°C				Base Number		
			12.0			

10.0

6.0 4.0 2.0

0.0

Nov28/22

Dec29/22

Jan 16/23

Base Number (mg KOH/g) 8.0

0ct9/23 .

: 17 Oct 2023

: 19 Oct 2023



Aug31/23 -

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

Received

Diagnosed

Sep19/23.

US 35172

T:

F:

Sep19/23 -

1130 County Line Rd Trafford, AL

Aug31/23

GFL environmental - 867 - Trafford (Blount Hauling)

0ct9/23 -