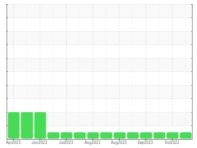


# **OIL ANALYSIS REPORT**

#### Sample Rating Trend





NORMAL

SAMPLE INFORMATION method limit/base

#### **Diesel Engine** Fluic

Machine Id 913178 Component

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.

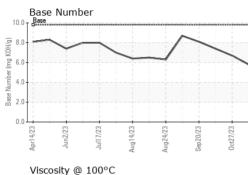
### Fluid Condition

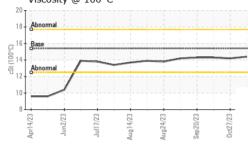
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number		Client Info		GFL0090959	GFL0098831	GFL0098806
Sample Date		Client Info		16 Nov 2023	27 Oct 2023	10 Oct 2023
Machine Age	hrs	Client Info		1843	1684	1550
Oil Age	hrs	Client Info		159	68	1616
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	20	12	11
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	2	1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	<1	<1
Aluminum	ppm	ASTM D5185m	>20	2	2	2
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	3	1	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		the second second	Pres 10 /le la la la			la facta a su o
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base	current	history1 5	nistory2 0
	ppm ppm					
Boron	ppm ppm	ASTM D5185m	0	<1	5 0 59	0 3 60
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	<1 0	5 0 59 <1	0 3 60 <1
Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 63	5 0 59 <1 910	0 3 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 63 <1	5 0 59 <1	0 3 60 <1 895 1005
Boron 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 0 60 0 1010 1070 1150	<1 0 63 <1 1019 1077 962	5 0 59 <1 910 982 1037	0 3 60 <1 895 1005 962
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	<1 0 63 <1 1019 1077	5 0 59 <1 910 982 1037 1232	0 3 60 <1 895 1005 962 1143
Boron 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	0 0 60 0 1010 1070 1150	<1 0 63 <1 1019 1077 962	5 0 59 <1 910 982 1037	0 3 60 <1 895 1005 962
Boron 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	<1 0 63 <1 1019 1077 962 1315	5 0 59 <1 910 982 1037 1232	0 3 60 <1 895 1005 962 1143
Boron 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 0 63 <1 1019 1077 962 1315 2747	5 0 59 <1 910 982 1037 1232 2741	0 3 60 <1 895 1005 962 1143 2608
Boron 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	<1 0 63 <1 1019 1077 962 1315 2747 current	5 0 59 <1 910 982 1037 1232 2741 history1	0 3 60 <1 895 1005 962 1143 2608 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	<1 0 63 <1 1019 1077 962 1315 2747 current 6	5 0 59 <1 910 982 1037 1232 2741 history1 6	0 3 60 <1 895 1005 962 1143 2608 history2 5
Boron 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 <b>method</b> ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b>	<1 0 63 <1 1019 1077 962 1315 2747 current 6 15	5 0 59 <1 910 982 1037 1232 2741 <b>history1</b> 6 4	0 3 60 <1 895 1005 962 1143 2608 history2 5 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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 <b>method</b> ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25	<1 0 63 <1 1019 1077 962 1315 2747 current 6 15 6	5 0 59 <1 910 982 1037 1232 2741 history1 6 4 6	0 3 60 <1 895 1005 962 1143 2608 history2 5 5 5 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	<1 0 63 <1 1019 1077 962 1315 2747 current 6 15 6 2 turrent	5 0 59 <1 910 982 1037 1232 2741 history1 6 4 6 4 6 4 6 <i>h</i> istory1	0 3 60 <1 895 1005 962 1143 2608 history2 5 5 5 4 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	<1 0 63 <1 1019 1077 962 1315 2747 <i>current</i> 6 15 6 <i>current</i> 0.6	5 0 59 <1 910 982 1037 1232 2741 history1 6 4 6 4 6 4 6 <i>history1</i>	0 3 60 <1 895 1005 962 1143 2608 history2 5 5 5 4 4 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	<1 0 63 <1 1019 1077 962 1315 2747 <i>current</i> 6 15 6 15 6 <i>current</i> 0.6 11.2	5 0 59 <1 910 982 1037 1232 2741 history1 6 4 6 4 6 history1 0.5 9.7	0 3 60 <1 895 1005 962 1143 2608 history2 5 5 5 4 4 history2 0.4 8.3
Boron 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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 0 63 <1 1019 1077 962 1315 2747 <i>current</i> 6 15 6 15 6 <i>current</i> 0.6 11.2 23.2	5 0 59 <1 910 982 1037 1232 2741 history1 6 4 6 4 6 <b>history1</b> 0.5 9.7 21.4	0 3 60 <1 895 1005 962 1143 2608 <b>history2</b> 5 5 5 4 <b>history2</b> 0.4 8.3 19.8
Boron 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 TS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 0 63 <1 1019 1077 962 1315 2747 Current 6 15 6 Current 0.6 11.2 23.2 Current	5 0 59 <1 910 982 1037 1232 2741 history1 6 4 6 4 6 <b>history1</b> 0.5 9.7 21.4 history1	0 3 60 <1 895 1005 962 1143 2608 history2 5 5 5 4 4 history2 0.4 8.3 19.8 history2

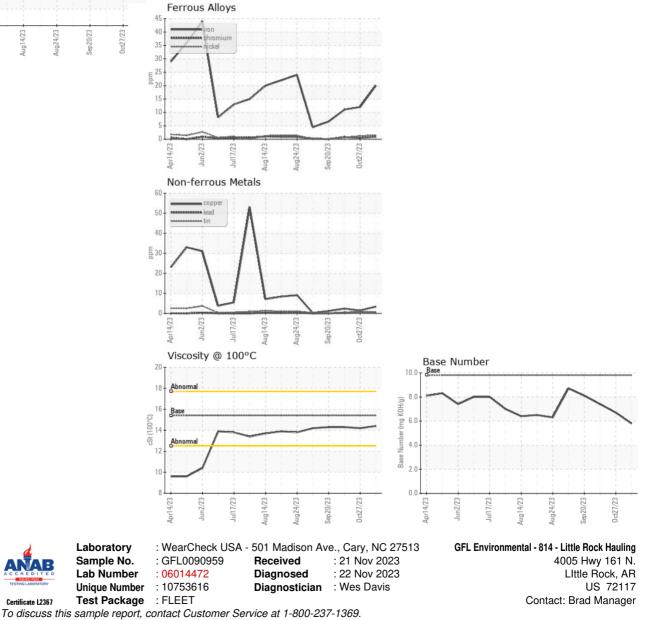


# **OIL ANALYSIS REPORT**





VISUAL		method				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	14.4	14.2	14.3
GRAPHS						



Report Id: GFL814 [WUSCAR] 06014472 (Generated: 11/22/2023 16:38:45) Rev: 1

\* - 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)

Certificate L2367

Submitted By: Nicole Walls

T:

F: