

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 920011

#### 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

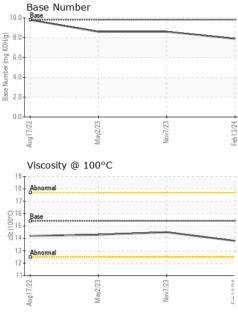
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0098079	GFL0086719	GFL0071265
Sample Date		Client Info		13 Feb 2024	07 Nov 2023	02 May 2023
Machine Age	hrs	Client Info		11103	10531	9340
Oil Age	hrs	Client Info		572	10531	9340
Oil Changed		Client Info		Changed	Changed	Not Changd
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	>110	40	47	29
Chromium	ppm	ASTM D5185m	>4	2	4	2
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum	ppm	ASTM D5185m	>25	15	8	6
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	2	<1	<1
Tin	ppm	ASTM D5185m	>4	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 3	history1 2	history2 2
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	3	2	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	3 0	2 <1	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 60	2 <1 61	2 0 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 60 <1	2 <1 61 <1	2 0 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	3 0 60 <1 944	2 <1 61 <1 997 1076 1024	2 0 63 <1 1044 1145 1095
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	3 0 60 <1 944 1013	2 <1 61 <1 997 1076	2 0 63 <1 1044 1145
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	3 0 60 <1 944 1013 967	2 <1 61 <1 997 1076 1024	2 0 63 <1 1044 1145 1095
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	3 0 60 <1 944 1013 967 1258	2 <1 61 <1 997 1076 1024 1313	2 0 63 <1 1044 1145 1095 1388
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	0 0 60 1010 1070 1150 1270 2060	3 0 60 <1 944 1013 967 1258 2778	2 <1 61 <1 997 1076 1024 1313 2923	2 0 63 <1 1044 1145 1095 1388 3837
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	3 0 60 <1 944 1013 967 1258 2778 current	2 <1 61 <1 997 1076 1024 1313 2923 history1	2 0 63 <1 1044 1145 1095 1388 3837 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>	0 0 60 1010 1070 1150 1270 2060 Limit/base	3 0 60 <1 944 1013 967 1258 2778 2778 current 4	2 <1 61 <1 997 1076 1024 1313 2923 history1 5	2 0 63 <1 1044 1145 1095 1388 3837 history2 4
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 60 1010 1070 1150 1270 2060 Limit/base	3 0 60 <1 944 1013 967 1258 2778 2778 current 4 5	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3	2 0 63 <1 1044 1145 1095 1388 3837 history2 4 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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	3 0 60 <1 944 1013 967 1258 2778 current 4 5 2	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3 2	2 0 63 <1 1044 1145 1095 1388 3837 history2 4 5 2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 -20	3 0 60 <1 944 1013 967 1258 2778 current 4 5 2 2 current	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3 2 2 history1	2 0 63 <1 1044 1145 1095 1388 3837 history2 4 5 2 kistory2
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 >30 20 limit/base	3 0 60 <1 944 1013 967 1258 2778 <u>current</u> 4 5 2 2 <u>current</u> 0.7	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3 2 2 history1 0.7	2 0 63 <1 1044 1145 1095 1388 3837 history2 4 5 2 history2 0.7
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 200 <i>limit/base</i> >3 >20	3 0 60 <1 944 1013 967 1258 2778 <i>current</i> 4 5 2 2 <i>current</i> 0.7 10.0	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3 2 2 history1 0.7 9.1	2 0 63 <1 1044 1145 1095 1388 3837 history2 4 5 2 4 5 2 history2 0.7 9.2
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 <b>imit/base</b> >3 >20 >3	3 0 60 <1 944 1013 967 1258 2778 <u>current</u> 4 5 2 2 <u>current</u> 0.7 10.0 20.8	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3 2 2 history1 0.7 9.1 20.9	2 0 63 <1 1044 1145 1095 1388 3837 <b>history2</b> 4 5 2 <b>history2</b> 0.7 9.2 20.5
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	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 220 <b>imit/base</b> >30 >20 >30	3 0 60 <1 944 1013 967 1258 2778 <i>current</i> 4 5 2 <i>current</i> 0.7 10.0 20.8 <i>current</i>	2 <1 61 <1 997 1076 1024 1313 2923 history1 5 3 2 history1 0.7 9.1 20.9 history1	2 0 63 <1 1044 1145 1095 1388 3837 history2 4 5 2 history2 0.7 9.2 20.5 history2



# **OIL ANALYSIS REPORT**

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VISUAL		method	limit/base	current	history1	
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	NORM
Odor	scalar	*Visual	NORML	NORML	NORML	NORM
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	14.5	14.3
GRAPHS						
Ferrous Alloys						
iron						
40 - nickel	/					
30						
udd an						
20						
10-						
*********						
**************************************			124			
		Nov7/23	Feb13/24			
Aug17/22	s	Nov7/23	Feb13/24			
0 EE2721LI Biny Non-ferrous Metal	S	Nov1723	Feb 13/24			
Non-ferrous Metal	5	Nov7/23	Feb13/24			
Non-ferrous Metal	s	Nov7/23	Eeb 13/24			
Non-ferrous Metal	5	Nov7/23	Feb13/24			
Non-ferrous Metal	s	Nov7/23	Feb 13/2 4			
Non-ferrous Metal	s	EZLIVON	Feb 13/2 4			
Non-ferrous Metal	ls	Nev1733	Feb13/24			
Non-ferrous Metal	IS		Feb13/24			
Non-ferrous Metal	S					
Non-ferrous Metal	S					
Non-ferrous Metal				Base Numbe	21	
Non-ferrous Metal					21	
Non-ferrous Metal			10.0	Base	2 <b>1</b> .	
Non-ferrous Metal			10.0	Base	2r	
Non-ferrous Metal			10.0	Base	51.	
Non-ferrous Metal			10.0	Base	2 <b>r</b>	
Non-ferrous Metal			10.0	Base	51.	
Non-ferrous Metal			10.0 Eqp13/24	Asse	217	
Non-ferrous Metal			4.0 (0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	Asse	217	
Non-ferrous Metal			0.0 8.0 (Julie) asse fymmber (mg KOH(g) 4.0 4.0 4.0 13/24	Asse		Novi723



US 53150 Unique Number : 10884319 Diagnosed : 16 Feb 2024 - Wes Davis Test Package : FLEET Contact: Brian Schlomann Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. brian.schlomann@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (262)510-4586 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Received

Tested

: 16 Feb 2024

: 16 Feb 2024

Sample No.

Lab Number : 06091466

: GFL0098079

F:

Muskego, WI

W144 S6400 College Ct.