

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend



## Machine Id 718002

#### 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

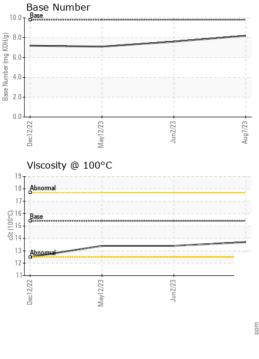
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086356	GFL0045425	GFL0071673
Sample Date		Client Info		07 Aug 2023	02 Jun 2023	12 May 2023
Machine Age	hrs	Client Info		7958	7543	7388
Oil Age	hrs	Client Info		570	155	7388
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	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		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	4	5	39
Chromium	ppm	ASTM D5185m	>4	<1	<1	2
Nickel	ppm	ASTM D5185m	>2	<1	1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>25	3	2	2
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	<1	0	2
Tin	ppm	ASTM D5185m	>4	<1	1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		ام م الذم مدر		ourropt	histowed.	history2
ADDITIVES		method	limit/base	current	history1	TIStoryz
Boron	ppm	ASTM D5185m	0	10	15	45
	ppm ppm					
Boron		ASTM D5185m	0	10	15	45
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	10 0	15 0	45 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	10 0 60	15 0 61	45 0 79
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	10 0 60 <1	15 0 61 <1	45 0 79 <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	10 0 60 <1 952	15 0 61 <1 963	45 0 79 <1 765
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	10 0 60 <1 952 1082	15 0 61 <1 963 1116	45 0 79 <1 765 1236
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	10 0 60 <1 952 1082 1017	15 0 61 <1 963 1116 1059	45 0 79 <1 765 1236 877
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	10 0 60 <1 952 1082 1017 1242	15 0 61 <1 963 1116 1059 1349	45 0 79 <1 765 1236 877 1103
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 0 1010 1070 1150 1270 2060	10 0 60 <1 952 1082 1017 1242 3727	15 0 61 <1 963 1116 1059 1349 3892	45 0 79 <1 765 1236 877 1103 3000
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	10 0 60 <1 952 1082 1017 1242 3727 current	15 0 61 <1 963 1116 1059 1349 3892 history1	45 0 79 <1 765 1236 877 1103 3000 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	10 0 60 <1 952 1082 1017 1242 3727 current 4	15 0 61 <1 963 1116 1059 1349 3892 history1 4	45 0 79 <1 765 1236 877 1103 3000 history2 9
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 0 1010 1070 1150 1270 2060 Limit/base >30	10 0 60 <1 952 1082 1017 1242 3727 current 4 1 3	15 0 61 <1 963 1116 1059 1349 3892 history1 4 <1	45 0 79 <1 765 1236 877 1103 3000 history2 9 8
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	10 0 60 <1 952 1082 1017 1242 3727 current 4 1 3	15 0 61 <1 963 1116 1059 1349 3892 history1 4 < 4 <1 4	45 0 79 <1 765 1236 877 1103 3000 history2 9 8 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >20 <b>limit/base</b>	10 0 60 <1 952 1082 1017 1242 3727 current 4 1 3 3	15 0 61 <1 963 1116 1059 1349 3892 history1 4 <1 4 history1	45 0 79 <1 765 1236 877 1103 3000 history2 9 8 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20 limit/base >33	10 0 60 <1 952 1082 1017 1242 3727 current 4 1 3 2 current 0.2	15 0 61 <1 963 1116 1059 1349 3892 history1 4 <1 4 + istory1 0.3	45 0 79 <1 765 1236 877 1103 3000 history2 9 8 4 4 history2 0.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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 imit/base >30 220 imit/base >3 >20	10 0 60 <1 952 1082 1017 1242 3727 current 4 1 3 current 0.2 5.8	15 0 61 <1 963 1116 1059 1349 3892 history1 4 <1 4 ×1 4 history1 0.3 6.5	45 0 79 <1 765 1236 877 1103 3000 history2 9 8 4 4 history2 0.7 9.9
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	10 0 60 <1 952 1082 1017 1242 3727 current 4 1 3 3 current 0.2 5.8 18.1	15 0 61 <1 963 1116 1059 1349 3892 history1 4 <1 4 ×1 4 <b>history1</b> 0.3 6.5 19.3	45 0 79 <1 765 1236 877 1103 3000 history2 9 8 4 4 history2 0.7 9.9 22.1
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 D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	10 0 60 <1 952 1082 1017 1242 3727 <i>current</i> 4 1 3 <i>current</i> 0.2 5.8 18.1	15 0 61 <1 963 1116 1059 1349 3892 history1 4 < <1 4 //>	45 0 79 <1 765 1236 877 1103 3000 history2 9 8 4 4 history2 0.7 9.9 22.1 history2



# **OIL ANALYSIS REPORT**

VISUAL



TESTING LEGONTORY	Laboratory Sample No. Lab Number Unique Number Test Package		501 Madiso Received Diagnosed Diagnostic	: 11 Aug 2 I : 11 Aug 2	2023 2023	13 GFL environmental - 867 - Trafford (Blount Haulin 1130 County Line R Trafford, A US 3517 Contact: Jonathan William jonathan.williams@gflenv.cor T			
		0ac12223	10.003 10.003	27/Dn4	0.0	May12/23	Jun2/23	0.07103	
		Abnormal 17- 5-16 Base 15- 15- 15- 14- 14- 14- 15- 15- 14- 15- 15- 15- 15- 15- 15- 15- 15			0.8 per (mg KOH/g)				
		22721290 Viscosity @ 100°	C			se Number			
		2			]				
		8 6 6							
		Non-ferrous Meta	- 50,5 ml		_				
		15- 10- 5-							
	Jun2/23 +	35 30 25 § 20							
		GRAPHS Ferrous Alloys							
		FLUID PROPI Visc @ 100°C		method lim ASTM D445 15.4	nit/base 4 <b>1</b> 3	current 3.7	history1 13.4	history2 13.4	
		Free Water	scalar *	Visual	N	EG	NEG	NEG	
	Aug	Odor Emulsified Water		Visual NOI Visual >0.2		ORML EG	NORML NEG	NORML NEG	
Jun223 -	Jun2/23 +	_ Sand/Dirt Appearance		Visual NOI Visual NOI		ONE ORML	NONE NORML	NONE NORML	
	Debris		Visual NO	NE N	ONE	NONE	NONE		
	Precipitate Silt		Visual NOI Visual NOI		ONE ONE	NONE NONE	NONE NONE		
	Yellow Metal	scalar *	Visual NO	NE N	ONE	NONE	NONE		

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Submitted By: see also GFL868 - Chelsea Bryan