

# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id **7822** 

Component

Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- LTR)

# DIAGNOSIS

### Recommendation

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

## Wear

All component wear rates are normal.

#### Contamination

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

#### Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORM	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0085911	GFL0059962	GFL0053084
Sample Date		Client Info		22 Jun 2023	20 Nov 2022	23 May 2022
Machine Age	hrs	Client Info		17795	17194	0
Oil Age	hrs	Client Info		600	0	0
Oil Changed		Client Info		N/A	N/A	Changed
Sample Status				SEVERE	SEVERE	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185(m)	>110	30	62	47
Chromium	ppm	ASTM D5185(m)	>4	2	2	2
Nickel	ppm	ASTM D5185(m)	>2	0	<1	<1
Titanium	ppm	ASTM D5185(m)		0	<1	0
Silver	ppm	ASTM D5185(m)	>2	0	0	0
Aluminum	ppm	ASTM D5185(m)	>25	3	3	4
Lead	ppm	ASTM D5185(m)	>45	<1	3	1
Copper	ppm	ASTM D5185(m)	>85	6	81	21
Tin	ppm	ASTM D5185(m)	>4	<1	1	1
Antimony	ppm	ASTM D5185(m)		0	<1	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
		method	limit/base	current	history 1	history 2
ADDITIVES		method	initia babb	ounonit	Thistory I	
Boron	ppm	ASTM D5185(m)	2	1	5	<u>▲</u> 61
Boron Barium	ppm ppm	ASTM D5185(m) ASTM D5185(m)	2 0	1 0	5 2	▲ 61 ▲ 18
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50	1 0 44	5 2 44	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> </ul>
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0	1 0 44 <1	5 2 44 2	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> </ul>
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950	1 0 44 <1 727	5 2 44 2 774	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050	1 0 44 <1 727 774	5 2 44 2 774 911	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995	1 0 44 <1 727 774 796	5 2 44 2 774 911 873	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180	1 0 44 <1 727 774 796 873	5 2 44 2 774 911 873 939	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600	1 0 44 <1 727 774 796 873 1847	5 2 44 2 774 911 873 939 2081	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600	1 0 44 <1 727 774 796 873 1847 <1	5 2 44 2 774 911 873 939 2081 <1	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600 limit/base	1 0 44 <1 727 774 796 873 1847 <1 current	5 2 44 2 774 911 873 939 2081 <1 history 1	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>► history 2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30	1 0 44 <1 727 774 796 873 1847 <1 current 5	5 2 44 2 774 911 873 939 2081 <1 <1 history 1 15	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>history 2</li> <li>25</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) <b>method</b> ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30	1 0 44 <1 727 774 796 873 1847 <1 2 <b>Current</b> 5 5	5 2 44 2 774 911 873 939 2081 <1 <1 history 1 15 9	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>history 2</li> <li>25</li> <li>13</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600 limit/base >30 >20	1 0 44 <1 727 774 796 873 1847 <1 2 5 5 5 2	5 2 44 2 774 911 873 939 2081 <1 ×1 history 1 15 9 2	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>kistory 2</li> <li>25</li> <li>13</li> <li>5</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30 >20 >5	1 0 44 <1 727 774 796 873 1847 <1 <b>Current</b> 5 5 5 2 2 17.5	5 2 44 2 774 911 873 939 2081 <1 <1 history 1 15 9 2 2 12.2	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li><b>bistory 2</b></li> <li>25</li> <li>13</li> <li>5</li> <li>▲ 4.8</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30 >20 >5	1 0 44 <1 727 774 796 873 1847 <1 <b>Current</b> 5 5 5 2 2 17.5 <b>Current</b>	5 2 44 2 774 911 873 939 2081 <1 ≤1 15 9 2 2 12.2 history 1	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>history 2</li> <li>25</li> <li>13</li> <li>5</li> <li>▲ 4.8</li> <li>history 2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593*	2 0 50 0 950 1050 995 1180 2600 imit/base >30 >20 >5 imit/base >3	1 0 44 <1 727 774 796 873 1847 <1 <u>current</u> 5 5 2 2 17.5 <u>current</u> 1	5 2 44 2 774 911 873 939 2081 <1 2081 <1 15 9 2 2 15 9 2 2 12.2 history 1 1.2	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>history 2</li> <li>25</li> <li>13</li> <li>5</li> <li>▲ 4.8</li> <li>history 2</li> <li>0.4</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593*	2 0 50 0 950 1050 995 1180 2600 imit/base >30 >20 >5 imit/base >3 >20	1 0 44 <1 727 774 796 873 1847 <1 <u>current</u> 5 5 2 2 17.5 <u>current</u> 1 10.2	5 2 44 2 774 911 873 939 2081 <1 2081 <1 15 9 2 2 15 9 2 2 12.2 <b>history 1</b> 1.2 1.2 1.2 1.2	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>bistory 2</li> <li>25</li> <li>13</li> <li>5</li> <li>▲ 4.8</li> <li>bistory 2</li> <li>0.4</li> <li>9.2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* <b>method</b> ASTM D7624* ASTM D7624* ASTM D7624*	2 0 50 0 950 1050 995 1180 2600 imit/base >30 >20 >3 >20 >30	1 0 44 <1 727 774 796 873 1847 <1 Current 5 5 2 17.5 Current 1 10.2 25.3	5 2 44 2 774 911 873 939 2081 <1 15 9 2 15 9 2 12.2 history 1 1.2 1.2 11.0 25.6	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>history 2</li> <li>25</li> <li>13</li> <li>5</li> <li>▲ 4.8</li> <li>history 2</li> <li>0.4</li> <li>9.2</li> <li>21.2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* <b>method</b> ASTM D7844* ASTM D7624* ASTM D7415*	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30 <b>limit/base</b> >3 >20 >3 <b>limit/base</b> >3 >20 <b>limit/base</b>	1 0 44 <1 727 774 796 873 1847 <1 <i>current</i> 5 5 2 17.5 <i>current</i> 1 10.2 25.3 <i>current</i>	5         2         44         2         774         911         873         939         2081         <1         15         9         2         14         15         9         2         12.2         history 1         1.2         11.0         25.6         history 1	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> </ul> Pistory 2 25 <ul> <li>13</li> <li>5</li> <li>▲ 4.8</li> </ul> history 2 <ul> <li>0.4</li> <li>9.2</li> <li>21.2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* <b>method</b> ASTM D7624* ASTM D7624* ASTM D7414*	2 0 50 0 950 1050 995 1180 2600 imit/base >30 imit/base >3 >20 >30 imit/base >3 >20 >30	1 0 44 <1 727 774 796 873 1847 <1 Current 5 5 2 17.5 Current 1 10.2 25.3 Current 26.8	<ul> <li>1350 y 1</li> <li>5</li> <li>2</li> <li>44</li> <li>2</li> <li>774</li> <li>911</li> <li>873</li> <li>939</li> <li>2081</li> <li>&lt;1</li> <li>history 1</li> <li>15</li> <li>9</li> <li>2</li> <li>12.2</li> <li>history 1</li> <li>1.2</li> <li>11.0</li> <li>25.6</li> <li>history 1</li> <li>24.9</li> </ul>	<ul> <li>▲ 61</li> <li>▲ 18</li> <li>▲ 4</li> <li>6</li> <li>▲ 658</li> <li>1299</li> <li>▲ 696</li> <li>▲ 751</li> <li>2497</li> <li>&lt;1</li> <li>bistory 2</li> <li>25</li> <li>13</li> <li>5</li> <li>▲ 4.8</li> <li>history 2</li> <li>0.4</li> <li>9.2</li> <li>21.2</li> <li>history 2</li> <li>14.4</li> </ul>



Fuel Dilution

# **OIL ANALYSIS REPORT**



Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

Report Id: GFL554 [WCAMIS] 02567693 (Generated: 07/05/2023 10:54:34) Rev: 1

Submitted By: Brian Gagne Page 2 of 2

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Mav/23/22

Edmonton, AB

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Т:

F:

NEG

NEG

12.4

history 2