

## **OIL ANALYSIS REPORT**

FUEL

### Machine Id

### 227068-9 Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (12 GAL)

#### DIAGNOSIS

#### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

Light fuel dilution occurring. No other contaminants were detected 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		GFL0125857	GFL0118694	GFL0118644
Sample Date		Client Info		13 Jun 2024	28 May 2024	10 May 2024
Machine Age	hrs	Client Info		20293	20293	0
Oil Age	hrs	Client Info		150	400	600
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				MARGINAL	ABNORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	>80	6	17	13
Chromium	ppm	ASTM D5185m	>5	<1	2	3
Nickel	ppm	ASTM D5185m	>2	0	<1	3
Titanium	ppm	ASTM D5185m		<1	<1	2
Silver	ppm	ASTM D5185m	>3	0	<1	3
Aluminum	ppm	ASTM D5185m	>30	<1	2	3
Lead	ppm	ASTM D5185m	>30	<1	<1	3
Copper	ppm	ASTM D5185m	>150	<1	2	4
Tin	ppm	ASTM D5185m	>5	0	<1	3
Vanadium	ppm	ASTM D5185m		<1	0	2
Cadmium	ppm	ASTM D5185m		0	0	2
		and the state	line it /le e e e		Information of	history?
ADDITIVES		method	iimit/base	current	nistory i	TIStory2
Boron	ppm	ASTM D5185m	0	0	0	<1
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0 0	0 0	0 <1	<1
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 60	0 <1 61	<1 1 58
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 60 <1	0 <1 61 <1	<1 1 58 2
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 60 <1 1049	0 <1 61 <1 952	<1 1 58 2 895
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	0 0 60 <1 1049 1164	0 <1 61 <1 952 1062	<1 1 58 2 895 1007
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 ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 60 <1 1049 1164 1140	0 <1 61 <1 952 1062 1046	<1 1 58 2 895 1007 992
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 0 60 <1 1049 1164 1140 1399	0 <1 61 <1 952 1062 1046 1205	<pre>1 58 2 895 1007 992 1149</pre>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 0 60 0 1010 1070 1150 1270 2060	0 0 60 <1 1049 1164 1140 1399 3969	0       <1       61       <1       952       1062       1046       1205       3121	<pre></pre>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 0 60 <1 1049 1164 1140 1399 3969 Current	0         <1         61         <1         952         1062         1046         1205         3121         history1	<pre></pre>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm 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 0 1010 1070 1150 1270 2060 limit/base >20	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4	0       <1       61       <1       952       1062       1046       1205       3121       history1       14	<pre></pre>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4 2	0         <1	<pre></pre>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20	0         0         60         <1         1049         1164         1140         1399         3969         current         4         2         2         2         2	0         <1         61         <1         952         1062         1046         1205         3121         history1         14         3         2	<pre></pre>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20 >5	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4 2 2 2 ▲ 2.4	Nistory I         0         <1         61         <1         952         1062         1046         1205         3121         history1         14         3         2         1.2	<ul> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>▲ 2.0</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20 >5	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4 2 2 2 2.4 Current	Nistory I         0         <1         61         <1         952         1062         1046         1205         3121         history1         14         3         2         7.2         history1	<ul> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>≥.0</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D51854	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4 2 2 2 ▲ 2.4 Current 0.1	0         <1	<ul> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>2.0</li> <li>history2</li> <li>0.2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D51854	Inni/base         0         0         60         0         1010         1070         1150         1270         2060         limit/base         >20         >5         limit/base         >3         >20	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4 2 2 2 ▲ 2.4 Current 0.1 6.3	Nistory I         0         <1	<ul> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>▲ 2.0</li> <li>history2</li> <li>0.2</li> <li>8.7</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20 >30	0         0         60         <1         1049         1164         1399         3969         current         4         2         2         ▲         2.4         current         0.1         6.3         18.1	Nistory I         0         <1         61         <1         952         1062         1046         1205         3121         history1         14         3         2         7.2         history1         0.3         8.2         19.3	<ul> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>▲ 2.0</li> <li>history2</li> <li>0.2</li> <li>8.7</li> <li>19.1</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm % Abs/cm	Method         ASTM D5185m         ASTM D7844         *ASTM D7415         method	Imil/base         0         0         60         0         1010         1070         1150         1270         2060         limit/base         >20         >5         limit/base         >3         >20         >3         >20         >3         >20         imit/base         >3         >20         >30	Current 0 0 60 <1 1049 1164 1140 1399 3969 Current 4 2 2 2 2 2 2 2 2 2 2 1 0.1 6.3 18.1 Current	Nistory I         0         <1	<ul> <li>Instory2</li> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>2.0</li> <li>history2</li> <li>0.2</li> <li>8.7</li> <li>19.1</li> <li>history2</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation CXidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Imethod           ASTM D5185m           ASTM D7844           *ASTM D7415           method           *ASTM D7414	Inni/base         0         60         0         1010         1070         1150         1270         2060         limit/base         >20         >5         limit/base         >3         >20         >3         >20         >3         >20         >3         >20         >3         >20         >3         >20         >3         >20         >30         limit/base         >25	0         0         60         <1         1049         1164         1399         3969         current         4         2         2         2.4         current         0.1         6.3         18.1         current         14.3	nistory I         0         <1	<ul> <li>1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>▲ 2.0</li> <li>history2</li> <li>0.2</li> <li>8.7</li> <li>19.1</li> <li>history2</li> <li>16.7</li> </ul>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI Oxidation Base Number (BN)	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Imethoo           ASTM D5185m           ASTM D7844           *ASTM D7414           ASTM D74144	Imit/base         0         60         0         1010         1070         1150         1270         2060         limit/base         >20         >20         limit/base         >20         >20         >20         >20         >20         >20         S         >20         >20         >20         >20         >20         >20         >20         >20         >20         >20         >20         >20         >20         >30         limit/base         >25         9	0         0         60         <1         1049         1164         1399         3969         current         4         2         2         ▲ 2.4         current         0.1         6.3         18.1         current         14.3         9.2	Nistory I         0         <1	<ul> <li>Initiony2</li> <li>&lt;1</li> <li>58</li> <li>2</li> <li>895</li> <li>1007</li> <li>992</li> <li>1149</li> <li>3245</li> <li>history2</li> <li>15</li> <li>5</li> <li>4</li> <li>▲ 2.0</li> <li>history2</li> <li>0.2</li> <li>8.7</li> <li>19.1</li> <li>history2</li> <li>16.7</li> <li>8.8</li> </ul>



# **OIL ANALYSIS REPORT**







Apr4/23

lun28/23 Jov16/23

Dec17/22

Jov22/22

Α

Feb17/22

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	12.3	▲ 10.7	11.1
GRAPHS						

Ferrous Alloys 35 30 25 20 10 5 Feb17/22 Dec17/22 Anr4/23 n15/74 Non-ferrous Metals lead



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 166 - Phenix City Sample No. : GFL0125857 Received : 20 Jun 2024 18 Old Brickyard Rd Lab Number : 06215678 Tested : 24 Jun 2024 Phenix City, AL Unique Number : 11088542 Diagnosed : 24 Jun 2024 - Wes Davis US 36869 Test Package : FLEET ( Additional Tests: PercentFuel ) Contact: DEAN PEACE JR Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. dean.peace@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Apr5/24 May28/24

Jan15/24

Submitted By: DARRIN WRIGHT

Vpr5/24 Aav28/24

Page 2 of 2