

# **OIL ANALYSIS REPORT**

# Area (97J3WG) 920084-205324

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	<b>/</b> ATION	method				history2
Sample Number		Client Info		GFL0122907	GFL0122940	GFL0118830
Sample Date		Client Info		21 Jun 2024	04 Jun 2024	16 May 2024
Machine Age	hrs	Client Info		19845	19699	19550
Oil Age	hrs	Client Info		20404	20258	138
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAI	NORMAL
			11 11 11	-	11.1	
CONTAMINATI	ON	method	limit/base	current	nistory i	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 METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	8	6	4
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	<1	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	3	3
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
						â
Cadmium	ppm	ASTM D5185m		<1	0	0
Cadmium ADDITIVES	ppm	method	limit/base	<1 current	0 history1	0 history2
Cadmium ADDITIVES Boron	ppm	ASTM D5185m method ASTM D5185m	limit/base	<1 current 14	0 history1 2	0 history2 3
Cadmium ADDITIVES Boron Barium	ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base 0 0	<1 current 14 <1	0 history1 2 0	0 history2 3 0
Cadmium ADDITIVES Boron Barium Molvbdenum	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	<1 current 14 <1 62	0 history1 2 0 67	0 history2 3 0 69
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	<1 current 14 <1 62 0	0 history1 2 0 67 0	0 history2 3 0 69 0
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	<1 current 14 <1 62 0 966	0 history1 2 0 67 0 1006	0 history2 3 0 69 0 1102
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070	<1 current 14 <1 62 0 966 1143	0 history1 2 0 67 0 1006 1185	0 history2 3 0 69 0 1102 1321
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150	<1 current 14 <1 62 0 966 1143 1119	0 history1 2 0 67 0 1006 1185 1188	0 history2 3 0 69 0 1102 1321 1336
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270	<1 current 14 <1 62 0 966 1143 1119 1294	0 history1 2 0 67 0 1006 1185 1188 1359	0 history2 3 0 69 0 1102 1321 1336 1476
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060	<1 current 14 <1 62 0 966 1143 1119 1294 3065	0 history1 2 0 67 0 1006 1185 1188 1359 3531	0 history2 3 0 69 0 1102 1321 1336 1476 4112
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method	limit/base 0 0 60 0 1010 1070 1150 1270 2060	<1 current 14 <1 62 0 966 1143 1119 1294 3065 current	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	imit/base 0 0 0 0 0 1010 1070 1150 1270 2060  >25	<1 current 14 <1 62 0 966 1143 1119 1294 3065 current 4	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	<1 current 14 <1 62 0 966 1143 1119 1294 3065 current 4 8	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 4	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m	limit/base 0 0 0 1010 1070 1150 1270 2060 s25 s20	<1 current 14 <1 62 0 966 1143 1119 1294 3065 current 4 8 2	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 4 3	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	<1 <ul> <li>current</li> <li>14</li> <li>&lt;1</li> <li>62</li> <li>0</li> <li>966</li> <li>1143</li> <li>1119</li> <li>1294</li> <li>3065</li> <li>current</li> <li>4</li> <li>8</li> <li>2</li> <li>current</li> </ul>	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 4 3 history1	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3 3 history2
Cadmium ADDITIVES 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 Method ASTM D5185m ASTM D5185m	imit/base 0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base	<1 current 14 <1 62 0 966 1143 1119 1294 3065 current 4 8 2 current 0,4	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 4 3 4 3 4 3 4 3	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3 3 history2 0,2
Cadmium ADDITIVES 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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	<1 <ul> <li>current</li> <li>14</li> <li>&lt;1</li> <li>62</li> <li>0</li> <li>966</li> <li>1143</li> <li>1119</li> <li>1294</li> <li>3065</li> <li>current</li> <li>4</li> <li>8</li> <li>2</li> <li>current</li> <li>0.4</li> <li>6.9</li> </ul>	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 4 3 4 3 4 3 1 5 7	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3 history2 0.2 5,3
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANI Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM	imit/base          0         0         60         0         1010         1070         1150         1270         2060         limit/base         >25         Iso         >20         limit/base         >20         >30	<1 <ul> <li>&lt;1</li> <li>current</li> <li>14</li> <li>&lt;1</li> <li>62</li> <li>0</li> <li>966</li> <li>1143</li> <li>1119</li> <li>1294</li> <li>3065</li> <li>current</li> <li>4</li> <li>8</li> <li>2</li> <li>current</li> <li>0.4</li> <li>6.9</li> <li>18.9</li> </ul>	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 4 3 4 3 <b>history1</b> 0.3 5.7 18.2	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3 3 history2 0.2 5.3 17.5
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25 Jimit/base >3 >20 Simit/base	<1 <ul> <li>&lt;1</li> <li>&lt;1</li> <li>&lt;1</li> <li>&lt;1</li> <li>62</li> <li>0</li> <li>966</li> <li>1143</li> <li>1119</li> <li>1294</li> <li>3065</li> <li>current</li> <li>4</li> <li>8</li> <li>2</li> <li>current</li> <li>0.4</li> <li>6.9</li> <li>18.9</li> <li>current</li> </ul>	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 3 4 3 3 4 3 5 7 1 8 2 0.3 5.7 18.2 history1	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3 history2 0.2 5.3 17.5 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM	imit/base 0 0 0 0 1010 1070 1150 1270 2060  imit/base >25 3 >20 imit/base >3 >20 >30	<1 <ul> <li>&lt;1</li> <li>&lt;1</li> <li>&lt;1</li> <li>&lt;1</li> <li>62</li> <li>0</li> <li>966</li> <li>1143</li> <li>1119</li> <li>1294</li> <li>3065</li> <li>current</li> <li>4</li> <li>8</li> <li>2</li> <li>current</li> <li>0.4</li> <li>6.9</li> <li>18.9</li> <li>current</li> <li>14.1</li> </ul>	0 history1 2 0 67 0 1006 1185 1188 1359 3531 history1 3 3 4 3 4 3 <b>history1</b> 0.3 5.7 18.2 history1 13.3	0 history2 3 0 69 0 1102 1321 1336 1476 4112 history2 4 5 3 history2 0.2 5.3 17.5 history2 13.2

Sample Rating Trend



# **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 PROPEI	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.5	14.4

Ferrous Alloys

10

bpm





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 836 - Kansas City Hauling Sample No. : GFL0122907 Received : 28 Jun 2024 7801 East Truman Road Lab Number : 06224218 Tested : 01 Jul 2024 Kansas City, MO Unique Number : 11102415 Diagnosed : 01 Jul 2024 - Wes Davis US 64126 Test Package : FLEET Contact: Loyce Stewart Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. loyce.stewart@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)

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Submitted By: JEREMY BROWN

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