

# **OIL ANALYSIS REPORT**

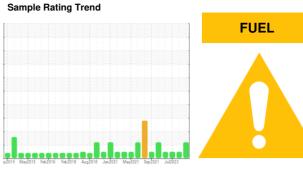


Area **(YA110701) VOLVO 2416** 

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)



## **DIAGNOSIS**

### Recommendation

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

Metal levels are typical for a new component breaking in.

# Contamination

Light fuel dilution occurring.

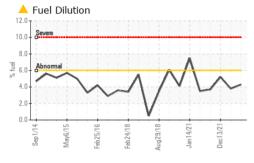
### Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

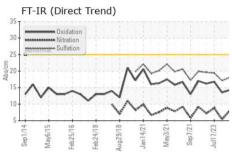
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0128326	GFL0111383	GFL0072226
Sample Date		Client Info		11 Jul 2024	11 Mar 2024	17 Jul 2023
Machine Age	mls	Client Info		24895	546906	368117
Oil Age	mls	Client Info		0	0	24154
Oil Changed		Client Info		N/A	N/A	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL
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	>100	10	7	10
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	4	2	5
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	3	1	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES						
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	method ASTM D5185m	limit/base	current 4	history1 13	history2 8
	ppm					
Boron	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	0	4	13	8
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	4 0	13 0	8
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 55	13 0 59	8 0 59
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 55 0	13 0 59 <1	8 0 59 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 55 0 868	13 0 59 <1 910	8 0 59 <1 815
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	4 0 55 0 868 1011	13 0 59 <1 910 1043	8 0 59 <1 815 1048
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	4 0 55 0 868 1011 951	13 0 59 <1 910 1043 982	8 0 59 <1 815 1048 918
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	4 0 55 0 868 1011 951 1155	13 0 59 <1 910 1043 982 1167	8 0 59 <1 815 1048 918 1109
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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 0 55 0 868 1011 951 1155 3273	13 0 59 <1 910 1043 982 1167 3103	8 0 59 <1 815 1048 918 1109 3103
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 0 55 0 868 1011 951 1155 3273	13 0 59 <1 910 1043 982 1167 3103 history1	8 0 59 <1 815 1048 918 1109 3103 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 0 55 0 868 1011 951 1155 3273 current	13 0 59 <1 910 1043 982 1167 3103 history1	8 0 59 <1 815 1048 918 1109 3103 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 0 55 0 868 1011 951 1155 3273 current 8	13 0 59 <1 910 1043 982 1167 3103 history1 5	8 0 59 <1 815 1048 918 1109 3103 history2 6 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 0 55 0 868 1011 951 1155 3273 current 8 3	13 0 59 <1 910 1043 982 1167 3103 history1 5 2	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >6.0	4 0 55 0 868 1011 951 1155 3273 current 8 3 2 4.3	13 0 59 <1 910 1043 982 1167 3103 history1 5 2 2 <1.0	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1 3.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >6.0	4 0 55 0 868 1011 951 1155 3273  current 8 3 2  4.3  current	13 0 59 <1 910 1043 982 1167 3103 history1 5 2 2 <1.0 history1	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1 3.8 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >6.0	4 0 55 0 868 1011 951 1155 3273 current 8 3 2 ▲ 4.3 current 0.3	13 0 59 <1 910 1043 982 1167 3103 history1 5 2 2 <1.0 history1 0.1	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1 3.8 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >6.0 limit/base >3 >20	4 0 55 0 868 1011 951 1155 3273 current 8 3 2  4.3 current 0.3 8.1	13 0 59 <1 910 1043 982 1167 3103 history1 5 2 2 <1.0 history1 0.1 5.4	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1 3.8 history2 0.2 8.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >6.0 limit/base >3 >20 >30 limit/base	4 0 55 0 868 1011 951 1155 3273 current 8 3 2  4.3 current 0.3 8.1 18.1 current	13 0 59 <1 910 1043 982 1167 3103 history1 5 2 <1.0 history1 0.1 5.4 17.1 history1	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1 3.8 history2 0.2 8.8 19.4 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 0 0 1010 1150 1270 2060 limit/base >25 >20 >6.0 limit/base >3 >20 >30	4 0 55 0 868 1011 951 1155 3273 current 8 3 2 ▲ 4.3 current 0.3 8.1 18.1	13 0 59 <1 910 1043 982 1167 3103 history1 5 2 2 <1.0 history1 0.1 5.4 17.1	8 0 59 <1 815 1048 918 1109 3103 history2 6 2 1 3.8 history2 0.2 8.8 19.4

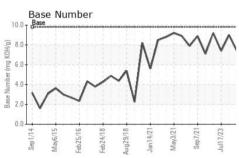


# **OIL ANALYSIS REPORT**



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5+		$\overline{}$	_	$\sim$			V	
0-	V \		~	VA	M	atte.	A A	A

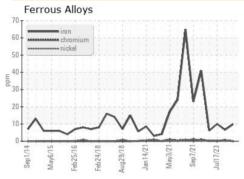


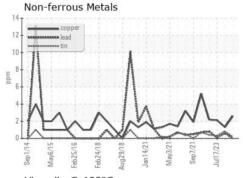


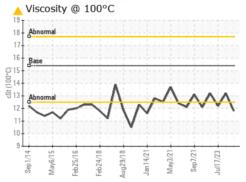
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

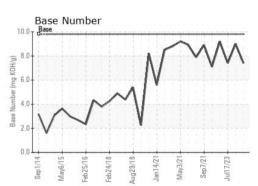
FLUID PROPE	:RIIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	<u> </u>	13.2	12.2

### **GRAPHS**













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0128326 Lab Number : 06239796

Received **Tested** Unique Number : 11128630 Diagnosed

: 17 Jul 2024 : 19 Jul 2024

: 19 Jul 2024 - Sean Felton Test Package: FLEET (Additional Tests: FuelDilution, PercentFuel)

GFL Environmental - 004 - Newport - Central Coast 427 Roberts Road Newport, NC US 28570

Contact: Marquis Williams marquis.williams@gflenv.com T:

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

To discuss this sample report, contact Customer Service at 1-800-237-1369.

F: (252)223-6010