

OIL ANALYSIS REPORT

Sample Rating Trend

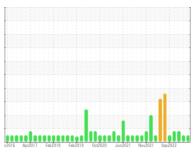




(YA111289) GFL035 Machine Id 2456

Component **Diesel Engine**Eluid

PETRO CANADA DURON SHP 15W40 (11 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

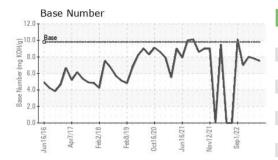
Fluid Condition

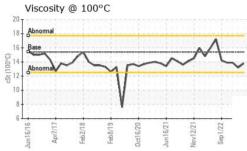
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date Client Info 04 Jan 2024 19 Oct 2023 04 Apr 202 Machine Age mls Client Info 368593 368593 368593 Oil Age mls Client Info 600 0 0 Oil Changed Client Info Changed Cha	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 368593 368507 16500 <	Sample Number		Client Info		GFL0085226	GFL0085238	GFL0053143
Oil Age mls Client Info 600 0 0 0 hanged Changed	Sample Date		Client Info		04 Jan 2024	19 Oct 2023	04 Apr 2023
Oil Changed Sample Status Client Info MoRMAL Changed NORMAL Changed NORMAL Changed ABNORM. Changed ABSOORM.	Machine Age	mls	Client Info		368593	368593	368593
Sample Status NORMAL NORMAL ABNORM. CONTAMINATION method limit/base current history1 history1 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 17 33 25 Chromium ppm ASTM D5185m >20 <1 1 0 Nickel ppm ASTM D5185m >2 0 <1 0 Nickel ppm ASTM D5185m >2 0 <1 0 Lead ppm ASTM D5185m >2 0 0 0 Copper ppm ASTM D5185m >330 4 6 2 2 Tin ppm	Oil Age	mls	Client Info		600	0	0
CONTAMINATION method limit/base current history1 history1 Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 NEG NEG <td< th=""><th>Oil Changed</th><th></th><th>Client Info</th><th></th><th>Changed</th><th>Changed</th><th>Changed</th></td<>	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 17 33 25 Chromium ppm ASTM D5185m >20 <1 1 0 Nickel ppm ASTM D5185m >5 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Sliver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >40 <1 2 0 Copper ppm ASTM D5185m >40 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	CONTAMINATI	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >5 0 <1 0 Titanium ppm ASTM D5185m >2 0 <1	Iron	ppm	ASTM D5185m	>120	17	33	25
Titanium ppm ASTM D5185m >2 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 3 <1 Lead ppm ASTM D5185m >40 <1 2 0 Copper ppm ASTM D5185m >330 4 6 2 Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 <1 0 ADDITIVES method limit/base current history1 history1 Barium ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 <t< td=""><th>Chromium</th><td>ppm</td><td>ASTM D5185m</td><td>>20</td><th><1</th><td>1</td><td>0</td></t<>	Chromium	ppm	ASTM D5185m	>20	<1	1	0
Titanium ppm ASTM D5185m >2 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 3 <1 Lead ppm ASTM D5185m >40 <1 2 0 Copper ppm ASTM D5185m >330 4 6 2 2 Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 0 <1 0 Cadmium ppm ASTM D5185m 0 7 2 8 8 Boron ppm ASTM D5185m 0 7 2 8 8 Barium ppm ASTM D5185m 0 0 0 0 0 0 Magnesium ppm ASTM D5185m 1010 846 1137 79	Nickel			>5	0	<1	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 3 <1 Lead ppm ASTM D5185m >40 <1 2 0 Copper ppm ASTM D5185m >330 4 6 2 Tin ppm ASTM D5185m 0 <1 <1 0 Vanadium ppm ASTM D5185m 0 <1 <1 0 Cadmium ppm ASTM D5185m 0 <1 <0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 <1 <1 <1 Mangaesium ppm ASTM D5185m 1010 846 1137 <	Titanium		ASTM D5185m	>2	0	<1	0
Aluminum ppm ASTM D5185m >20 1 3 <1 Lead ppm ASTM D5185m >40 <1	Silver				0	0	0
Lead ppm ASTM D5185m >40 <1 2 0 Copper ppm ASTM D5185m >330 4 6 2 Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1270 1144 1479	Aluminum	• •	ASTM D5185m	>20	1	3	<1
Copper ppm ASTM D5185m >330 4 6 2 Tin ppm ASTM D5185m >15 <1	Lead			>40	<1	2	0
Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 1 -1 -1 Manganese ppm ASTM D5185m 0 -1 -1 -1 -1 Magnesium ppm ASTM D5185m 1010 846 1137 798 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2	Copper		ASTM D5185m	>330	4	6	2
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history Boron ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 225 2 5 3 Sodium ppm ASTM D5185m >25 2 5					<1	<1	0
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 73 59 Manganese ppm ASTM D5185m 0 <1	Vanadium	• •	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 0 7 2 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 73 59 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 846 1137 798 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 <th>Cadmium</th> <td></td> <td></td> <td></td> <th>0</th> <td><1</td> <td>0</td>	Cadmium				0	<1	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 73 59 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 846 1137 798 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1150 971 1260 919 Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m <1 2 1 Potassium ppm ASTM D5185m >20<	ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 73 59 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	7	2	8
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 846 1137 798 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1150 971 1260 919 Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 846 1137 798 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1150 971 1260 919 Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D	Molybdenum	ppm	ASTM D5185m	60	55	73	59
Magnesium ppm ASTM D5185m 1010 846 1137 798 Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1150 971 1260 919 Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm	•		ASTM D5185m	0	<1	<1	<1
Calcium ppm ASTM D5185m 1070 1021 1216 1106 Phosphorus ppm ASTM D5185m 1150 971 1260 919 Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION <	-				846	1137	798
Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	-		ASTM D5185m	1070	1021	1216	1106
Zinc ppm ASTM D5185m 1270 1144 1479 1094 Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Phosphorus	ppm	ASTM D5185m	1150	971	1260	919
Sulfur ppm ASTM D5185m 2060 2765 4140 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8			ASTM D5185m	1270	1144	1479	1094
Silicon ppm ASTM D5185m >25 2 5 3 Sodium ppm ASTM D5185m <1 2 1 Potassium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Sulfur		ASTM D5185m	2060	2765	4140	2977
Sodium ppm ASTM D5185m <1 2 1 Potassium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Silicon	ppm	ASTM D5185m	>25	2	5	3
Potassium ppm ASTM D5185m >20 2 3 0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Sodium	• •	ASTM D5185m		<1		1
Soot % % *ASTM D7844 >4 3.2 2.7 ▲ 3.1 Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Potassium	ppm	ASTM D5185m	>20	2	3	0
Nitration Abs/cm *ASTM D7624 >20 8.8 9.2 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Soot %	%	*ASTM D7844	>4	3.2	2.7	▲ 3.1
Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.4 24.4 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Nitration	Abs/cm	*ASTM D7624	>20	8.8	9.2	9.3
Oxidation Abs/.1mm *ASTM D7414 >25 13.5 14.6 15.8	Sulfation	Abs/.1mm	*ASTM D7415	>30			
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	14.6	15.8
Dago Harrison (DIV) highering herring below 0.0	Base Number (BN)	mg KOH/g			7.5	7.8	8.0



OIL ANALYSIS REPORT

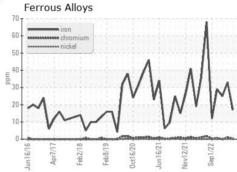


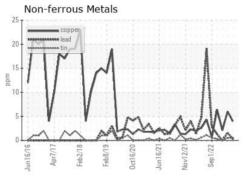


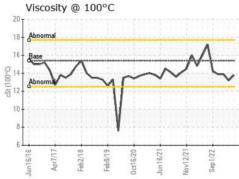
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

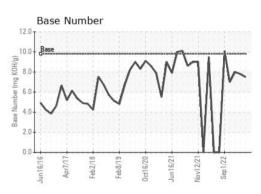
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.2	13.9

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: GFL0085226 : 06060828 : 10832210

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 16 Jan 2024 Diagnosed : 17 Jan 2024

Diagnostician : Wes Davis

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

* - 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)

GFL Environmental - 035 - Greensboro

1236 Elon Place High Point, NC US 27263

Contact: JORGE COSTA jorge.costa@gflenv.com T: (336)668-3712

Report Id: GFL035 [WUSCAR] 06060828 (Generated: 01/17/2024 10:33:38) Rev: 1

Submitted By: JORGE COSTA