

OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 811069 Component Diesel Engine Fluid PETRO CANAL

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

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

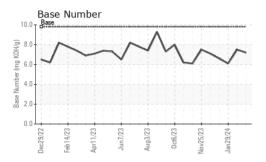
Fluid Condition

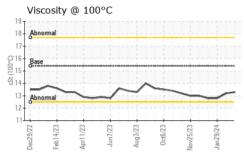
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0068897 GFL0068872 GFL0097167 Sample Date Client Info 19 Feb 2024 08 Feb 2024 29 Jan 2024 08 Geb 2024 0			3CZUZZ F80ZI	023 Apr2023 Jun2023	Aug 2023 0ct 2023 Nov 2023	Jan2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 254 135 556 556 135 556 145	Sample Number		Client Info		GFL0068897	GFL0068872	GFL0097161
Oil Age hrs Client Info 254 135 556 Oil Changed Sample Status Client Info Not Changd Nor Changd Nor Changd Nor Changed Nor Chang	Sample Date		Client Info		19 Feb 2024	08 Feb 2024	29 Jan 2024
Cilient Info	Machine Age	hrs	Client Info		8954	8835	8700
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2	Oil Age	hrs	Client Info		254	135	556
Fuel	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limitibase current history1 history2 Iron ppm ASTM D5185m >120 5 1 9 Chromium ppm ASTM D5185m >5 0 0 <1 Nickel ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 1 <1 Silver ppm ASTM D5185m >20 2 1 <1 Lead ppm ASTM D5185m >40 <1 0 <1 Copper ppm ASTM D5185m >15 <1 0 <1 Vanadium ppm ASTM D5185m >10 0 0	CONTAMINAT	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
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	5	1	9
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	0	0	<1
Aluminum ppm ASTM D5185m >20 2 1 <1 Lead ppm ASTM D5185m >40 <1	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead ppm ASTM D5185m >40 <1 0 1 Copper ppm ASTM D5185m >330 <1 0 2 Tin ppm ASTM D5185m >15 <1 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 4 6 4 Barium ppm ASTM D5185m 0 4 6 4 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 960	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <1 0 2 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	2	1	<1
Tin	Lead	ppm	ASTM D5185m	>40	<1	0	1
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 4 6 4 Manganese ppm ASTM D5185m 0 56 53 54 Manganesium ppm ASTM D5185m 1010 931 873 852 Calcium ppm ASTM D5185m 1070 960 946 887 Phosphorus ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>330</td> <th><1</th> <td>0</td> <td>2</td>	Copper	ppm	ASTM D5185m	>330	<1	0	2
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 53 54 Manganese ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	<1	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 53 54 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 931 873 852 Calcium ppm ASTM D5185m 1070 960 946 887 Phosphorus ppm ASTM D5185m 1150 970 970 885 Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 0 Potassium ppm ASTM D5185m	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 53 54 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 931 873 852 Calcium ppm ASTM D5185m 1070 960 946 887 Phosphorus ppm ASTM D5185m 1150 970 970 885 Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base <	Boron	ppm	ASTM D5185m	0	4	6	4
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 931 873 852 Calcium ppm ASTM D5185m 1070 960 946 887 Phosphorus ppm ASTM D5185m 1150 970 970 885 Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7845	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 931 873 852 Calcium ppm ASTM D5185m 1070 960 946 887 Phosphorus ppm ASTM D5185m 1150 970 970 885 Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/:nm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/:nm *ASTM D7414 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <th>56</th> <td>53</td> <td>54</td>	Molybdenum	ppm	ASTM D5185m	60	56	53	54
Calcium ppm ASTM D5185m 1070 960 946 887 Phosphorus ppm ASTM D5185m 1150 970 970 885 Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm "ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm "ASTM	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 970 970 885 Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION *ASTM D7414 <td< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><th>931</th><td>873</td><td>852</td></td<>	Magnesium	ppm	ASTM D5185m	1010	931	873	852
Zinc ppm ASTM D5185m 1270 1227 1139 1106 Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D74	Calcium	ppm	ASTM D5185m	1070	960	946	887
Sulfur ppm ASTM D5185m 2060 2920 2782 2532 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Phosphorus	ppm	ASTM D5185m	1150	970	970	885
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Zinc	ppm	ASTM D5185m	1270	1227	1139	1106
Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 3 3 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Sulfur	ppm	ASTM D5185m	2060	2920	2782	2532
Sodium ppm ASTM D5185m 3 3 0 Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Silicon	ppm	ASTM D5185m	>25	4	3	5
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Sodium	ppm	ASTM D5185m		3	3	0
Soot % % *ASTM D7844 >4 0.4 0.3 0.6 Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Potassium	ppm	ASTM D5185m	>20	2	0	2
Nitration Abs/cm *ASTM D7624 >20 6.4 5.6 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Soot %	%	*ASTM D7844	>4	0.4	0.3	0.6
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Nitration	Abs/cm	*ASTM D7624	>20	6.4	5.6	7.9
Oxidation Abs/.1mm *ASTM D7414 >25 14.1 13.5 14.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.7	18.0	19.3
	FLUID DEGRAE	OATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.1	13.5	14.5
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.2	7.5	6.1



OIL ANALYSIS REPORT

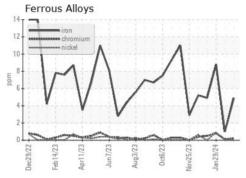


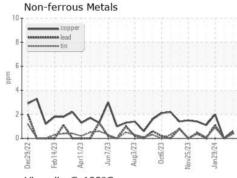


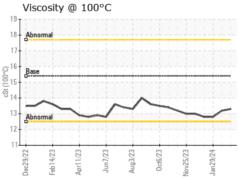
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

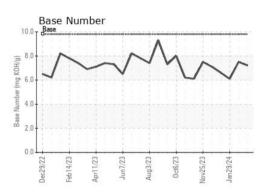
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.2	12.8

GRAPHS













Certificate L2367

Laboratory Sample No.

: GFL0068897 Lab Number : 06095352 Unique Number : 10888205 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 21 Feb 2024 **Tested** : 22 Feb 2024

Diagnosed : 22 Feb 2024 - Wes Davis

GFL Environmental - 073 - Warner Robins - Transwaste

155 Story Road Warner Robins, GA US 31093

Contact: JOSH MALONEY

jmaloney@gflenv.com T:

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)

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