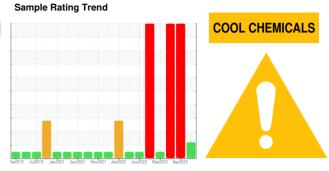


OIL ANALYSIS REPORT

(YA144059) 3811C

Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (46 GAL)



DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain elevated. Test for glycol is negative.

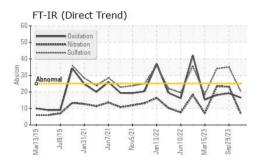
Fluid Condition

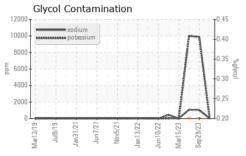
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

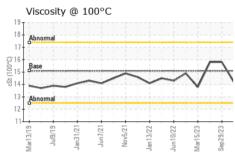
	io GAL)						
Sample Date Client Info 04 Apr 2024 29 Sep 2023 05 Sep 2023 Machine Age hrs Client Info 30272 30272 30272 Oil Age hrs Client Info 0 30272 30272 Oil Changed Client Info Changed Changed <th< th=""><th>SAMPLE INFOR</th><th>MATION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></th<>	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 30272	Sample Number		Client Info		GFL0090015	GFL0080534	GFL0074445
Dil Age	Sample Date		Client Info		04 Apr 2024	29 Sep 2023	05 Sep 2023
Client Info	Machine Age	hrs	Client Info		30272	30272	30272
ABNORMAL SEVERE SEVERE CONTAMINATION method fimit/base current history1 history2	Oil Age	hrs	Client Info		0	30272	30272
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 & 87 & 81 Chromium ppm ASTM D5185m >50 16 & 87 & 81 Chromium ppm ASTM D5185m >4 2 & 8 \$ 9 Vickel ppm ASTM D5185m >4 2 & 8 \$ 9 Silver ppm ASTM D5185m >3 0 0 < 1 Aluminum ppm ASTM D5185m >30 2 46 \$ 37 Lead ppm ASTM D5185m >30 2 46 \$ 37 Copper ppm ASTM D5185m >4 1 6 5 Cadmium ppm ASTM D5185m >4 1	Oil Changed		Client Info		Changed	Changed	Changed
Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 ▲ 87 ▲ 8 ▲ 9 Chromium ppm ASTM D5185m >4 2 ▲ 8 ▲ 9 Nickel ppm ASTM D5185m >2 <1 3 3 Silver ppm ASTM D5185m >3 0 0 <1 Aluminum ppm ASTM D5185m >3 0 0 <1 Lead ppm ASTM D5185m >30 2 46 37 Copper ppm ASTM D5185m >30 2 46 37 Copper ppm ASTM D5185m >3 3 39 △ 38 Tin ppm ASTM D5185m >4 1 △ 6 5 Valandium ppm ASTM D5185m <1 0 0	Sample Status				ABNORMAL	SEVERE	SEVERE
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 16 ▲ 87 ▲ 81 Chromium ppm ASTM D5185m >4 2 ▲ 8 ▲ 9 Nickel ppm ASTM D5185m >2 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Port	Water		WC Method	>0.1	NEG	NEG	NEG
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Astrological Ast	ron	ppm	ASTM D5185m	>50	16	▲ 87	▲ 81
Silver	Chromium	ppm	ASTM D5185m	>4	2	<u></u> 8	4 9
Silver	Nickel	ppm	ASTM D5185m	>2	<1	3	3
Aluminum ppm ASTM D5185m >9 3 4 11 9 Lead ppm ASTM D5185m >30 2 4 46 37 Copper ppm ASTM D5185m >35 3 39 4 38 Tin ppm ASTM D5185m >4 1 0 0 Cadmium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 45 8 10 Barium ppm ASTM D5185m 50 45 8 10 Barium ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 50 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 4 171 9875 4 1000 Sodium ppm ASTM D5185m >20 4 171 9875 4 1000 Glycol % "ASTM D2882 6.6 23.2 23.4 Nitration Abs/cm "ASTM D7844 0.1 0.1 0.2 Sulfation Abs/cm "ASTM D7844 >20 6.6 23.2 23.4 Sulfation Abs/cm "ASTM D7844 >	Titanium		ASTM D5185m		<1	<1	<1
Aluminum	Silver		ASTM D5185m	>3	0		<1
Lead ppm ASTM D5185m >30 2 ▲ 46 ▲ 37 Copper ppm ASTM D5185m >35 3 ▲ 39 ▲ 38 Fin ppm ASTM D5185m >4 1 ▲ 6 5 Vanadium ppm ASTM D5185m -1 0 0 Cadmium ppm ASTM D5185m -1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 45 8 10 Barium ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 50 49 100 98 Magnesium ppm ASTM D5185m 50 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 <	Aluminum		ASTM D5185m	>9	3	<u> 11</u>	9
Description	_ead	ppm	ASTM D5185m	>30	2	<u>4</u> 46	△ 37
Tin	Copper		ASTM D5185m	>35	3	4 39	△ 38
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 45 8 10 Barium ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 50 49 100 98 Magnesium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m >+100 10 2	• •		ASTM D5185m	>4		<u>^</u> 6	5
Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 45 8 10 Barium ppm ASTM D5185m 50 49 100 98 Molybdenum ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 50 49 100 98 Magnesium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100	Vanadium				<1	0	
Boron							
Barium ppm ASTM D5185m 5 0 0 3 Molybdenum ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 50 747 687 704 Calcium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 49 100 98 Manganese ppm ASTM D5185m 0 3 2 2 Magnesium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >+100 10 25 26 Godium ppm ASTM D5185m >20 171 9875 10000 Gilycol % *A	Boron	ppm	ASTM D5185m	50	45	8	10
Manganese ppm ASTM D5185m 0 3 2 2 Magnesium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >20 171 9875 10000 Glycol *ASTM D5185m >20 171 9875 10000 Glycol *ASTM D5185m >20 171 9875 10000 Glycol *ASTM D5185m >20 171 <t< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>5</td><th>0</th><td>0</td><td>3</td></t<>	Barium	ppm	ASTM D5185m	5	0	0	3
Magnesium ppm ASTM D5185m 560 747 687 704 Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 25 26 Godium ppm ASTM D5185m >20 171 9875 10000 Glycol "ASTM D544 0.1 0.2	Molybdenum	ppm	ASTM D5185m	50	49	100	98
Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D7844 0.1 0.1 0.2 Soot % % *ASTM D7844 0.1 0.1 0.2 Soot % % *ASTM D7844 0.1 <t< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>3</th><td>2</td><td>2</td></t<>	Manganese	ppm	ASTM D5185m	0	3	2	2
Calcium ppm ASTM D5185m 1510 1114 1622 1608 Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >+100 10 25 26 Solium ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D585m >20 171 9875 10000 Glycol % *ASTM D7844 0.1 0.1 0.2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7415	Magnesium	ppm	ASTM D5185m	560	747	687	704
Phosphorus ppm ASTM D5185m 780 671 966 954 Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D2982 0.20 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7415 >30	<u> </u>		ASTM D5185m	1510	1114	1622	1608
Zinc ppm ASTM D5185m 870 830 1208 1135 Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m 24 1019 1074 Potassium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D2982 0.20 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base	Phosphorus		ASTM D5185m	780	671	966	954
Sulfur ppm ASTM D5185m 2040 2130 3213 3289 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m 24 1019 1074 Potassium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D2982 △ 0.20 △ 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 <t< td=""><td>•</td><td></td><td></td><td></td><th></th><td>1208</td><td>1135</td></t<>	•					1208	1135
Silicon ppm ASTM D5185m >+100 10 25 26 Sodium ppm ASTM D5185m 24 1019 1074 Potassium ppm ASTM D5185m >20 171 9875 10000 Glycol % *ASTM D2982 0.20 0.20 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	_					3213	
Sodium ppm ASTM D5185m 24 ▲ 1019 ▲ 1074 Potassium ppm ASTM D5185m >20 ▲ 171 ♠ 9875 ▲ 10000 Glycol % *ASTM D2982 ▲ 0.20 ▲ 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 ▲ 171 ▲ 9875 ▲ 10000 Glycol % *ASTM D2982 ▲ 0.20 ▲ 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	Silicon	ppm	ASTM D5185m	>+100	10	25	26
Glycol % *ASTM D2982 ▲ 0.20 ▲ 0.20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	Sodium	ppm	ASTM D5185m		24	<u>▲</u> 1019	△ 1074
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	171	△ 9875	<u> </u>
Soot % % *ASTM D7844 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	Glycol	%	*ASTM D2982			▲ 0.20	▲ 0.20
Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 6.6 23.2 23.4 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1	Soot %	%	*ASTM D7844		0.1	0.1	0.2
Sulfation Abs/.1mm *ASTM D7415 >30 20.1 35.1 34.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 19.2 18.1				>20			
Oxidation							
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.5	19.2	18.1

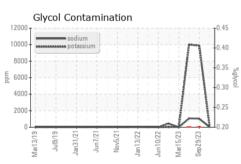


OIL ANALYSIS REPORT





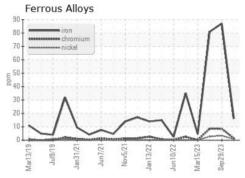


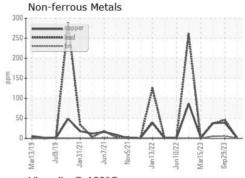


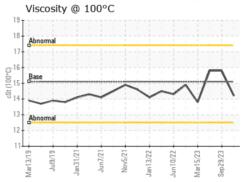
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

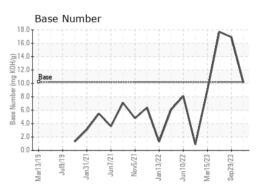
FLUID PROP	EHITES	method	iiiiii/base	current	riistory i	HIStory
Visc @ 100°C	cSt	ASTM D445	15.1	14.2	15.8	15.8

GRAPHS













Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06139477

: GFL0090015 Unique Number : 10964285

Received : 05 Apr 2024 **Tested** : 09 Apr 2024 Diagnosed

: 09 Apr 2024 - Jonathan Hester

GFL Environmental - 018 - Fayetteville

4621 Marracco Drive Hope Mills, NC US 28348

Contact: Robert Carter robert.carter@gflenv.com T: (910)596-1170

Test Package : FLEET Certificate 12367 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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