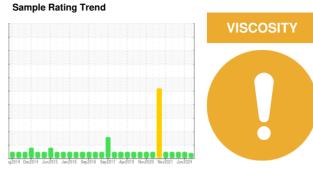


OIL ANALYSIS REPORT

(YA115865) 10421C

Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (30 QTS)



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

There is no indication of any contamination in the

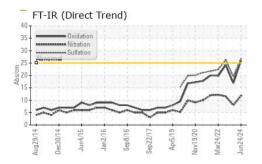
Fluid Condition

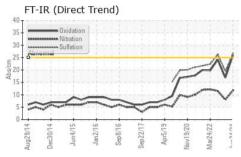
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

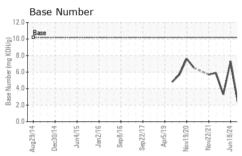
Sample Date	30 (413)		ilitora nector	t ouncula danzula Sepzu	i6 Sepzul/ Aprzula Movzuzu Movz	ozi ounzUZT	
Client Info 24 Jun 2024	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0082424	GFL0123413	GFL0050748
Oil Age	Sample Date		Client Info		24 Jun 2024	18 Jun 2024	25 Jan 2023
Contamped Client Info Changed ATTENTION NORMAL NORMAL	Machine Age	hrs	Client Info		0	99414	16435
ATTENTION NORMAL NORMAL	Oil Age	hrs	Client Info		0	99414	1606
ATTENTION NORMAL NORMAL	Oil Changed		Client Info		Changed	N/A	Changed
Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 26 7 13 Chromium ppm ASTM D5185m >4 2 -1 1 Nickel ppm ASTM D5185m >2 1 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 3 1 2 Lead ppm ASTM D5185m >9 3 1 2 Copper ppm ASTM D5185m >35 4 2 1 Tin ppm ASTM D5185m 0 -1 0 -1 Vanadium ppm ASTM D5185m 0 -1 0 -1 Vanadium ppm ASTM D5185m 50 14 31 12					_	NORMAL	
	CONTAMINAT	ION	method	limit/base	current	history1	history2
Continum	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>50	26	7	13
Silver	Chromium	ppm	ASTM D5185m	>4	2	<1	1
Saliver	Nickel		ASTM D5185m	>2	1	0	0
Silver	Titanium		ASTM D5185m		<1	<1	0
Aluminum	Silver		ASTM D5185m	>3	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>9	3	1	2
Tin	_ead	ppm	ASTM D5185m	>30	21	3	2
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 14 31 12 Barium ppm ASTM D5185m 50 0 0 0 Molybdenum ppm ASTM D5185m 50 48 49 50 Manganese ppm ASTM D5185m 50 48 49 50 Manganesium ppm ASTM D5185m 560 540 581 485 Calcium ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m >+100 10 4 5 Soliton ppm ASTM D5185m >+100 10 4<	Copper		ASTM D5185m	>35	4	2	1
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 14 31 12 Barium ppm ASTM D5185m 50 0 0 0 Molybdenum ppm ASTM D5185m 50 48 49 50 Manganese ppm ASTM D5185m 0 2 <1 <1 Magnesium ppm ASTM D5185m 560 540 581 485 Calcium ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 his		ppm	ASTM D5185m	>4	<1	0	1
ADDITIVES	Vanadium		ASTM D5185m		0	<1	0
Barium	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 48 49 50 Manganese ppm ASTM D5185m 0 2 <1 <1 Magnesium ppm ASTM D5185m 560 540 581 485 Calcium ppm ASTM D5185m 560 540 581 485 Calcium ppm ASTM D5185m 1510 1521 1667 1530 Phosphorus ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	50	14	31	12
Manganese ppm ASTM D5185m 0 2 <1 <1 Magnesium ppm ASTM D5185m 560 540 581 485 Calcium ppm ASTM D5185m 1510 1521 1667 1530 Phosphorus ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m >20 3 2 1 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624	Barium	ppm	ASTM D5185m	5	0	0	0
Magnesium ppm ASTM D5185m 560 540 581 485 Calcium ppm ASTM D5185m 1510 1521 1667 1530 Phosphorus ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >+100 10 4 5 Solicon ppm ASTM D5185m >+100 10 4 5 Solicon ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Solf % % *ASTM D7624 >20 11.7 8.0 11.5 Sulfation </td <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>50</td> <th>48</th> <td>49</td> <td>50</td>	Molybdenum	ppm	ASTM D5185m	50	48	49	50
Calcium ppm ASTM D5185m 1510 1521 1667 1530 Phosphorus ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Soliicon ppm ASTM D5185m >+100 10 4 5 Soliicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 </td <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>2</th> <td><1</td> <td><1</td>	Manganese	ppm	ASTM D5185m	0	2	<1	<1
Phosphorus ppm ASTM D5185m 780 770 853 627 Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limi	Magnesium	ppm	ASTM D5185m	560	540	581	485
Zinc ppm ASTM D5185m 870 890 1012 832 Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m 11 10 11 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25	Calcium	ppm	ASTM D5185m	1510	1521	1667	1530
Sulfur ppm ASTM D5185m 2040 2738 3020 2559 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m 11 10 11 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Phosphorus	ppm	ASTM D5185m	780	770	853	627
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m 11 10 11 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Zinc	ppm	ASTM D5185m	870	890	1012	832
Silicon ppm ASTM D5185m >+100 10 4 5 Sodium ppm ASTM D5185m 11 10 11 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Sulfur	ppm	ASTM D5185m	2040	2738	3020	2559
Sodium ppm ASTM D5185m 11 10 11 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Silicon	ppm	ASTM D5185m	>+100	10	4	5
INFRA-RED	Sodium	ppm	ASTM D5185m		11	10	11
Soot % % *ASTM D7844 0.1 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Potassium	ppm	ASTM D5185m	>20	3	2	1
Nitration Abs/cm *ASTM D7624 >20 11.7 8.0 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 26.6 19.5 26.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Soot %	%	*ASTM D7844		0.1	0	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Nitration	Abs/cm	*ASTM D7624	>20	11.7	8.0	11.5
Oxidation Abs/.1mm *ASTM D7414 >25 26.0 16.9 24.2	Sulfation	Abs/.1mm	*ASTM D7415	>30	26.6	19.5	26.3
	FLUID DEGRADATION method limit/base current history1 history2						
Base Number (BN) mg KOH/g ASTM D2896 10.2 2.3 7.3 3.3	Oxidation	Abs/.1mm	*ASTM D7414	>25	26.0	16.9	24.2
	Base Number (BN)	mg KOH/q	ASTM D2896	10.2	2.3	7.3	3.3



OIL ANALYSIS REPORT





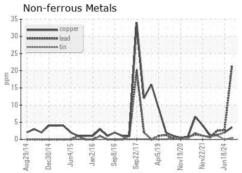


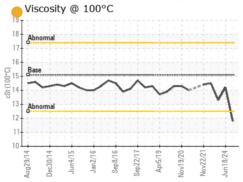
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

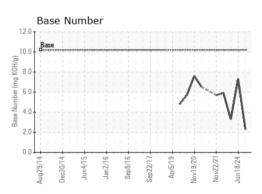
FLUID PROP	EHILES					
Visc @ 100°C	cSt	ASTM D445	15.1	11.8	14.2	13.3

GRAPHS

Ferrous Alloys











Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0082424 Lab Number : 06219430 Unique Number : 11097627

Received **Tested** Diagnosed

: 25 Jun 2024 : 28 Jun 2024 : 28 Jun 2024 - Jonathan Hester

GFL Environmental - 007 - Brunswick 2809 Galloway Road Bolivia, NC

US 28422 Contact: DONALD CRAVEN dcraven@gflenv.com

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)

F: (910)253-4179

T: