

OIL ANALYSIS REPORT

(YA122715) 3630C

Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40 (--- GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

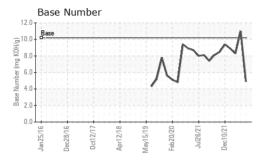
Fluid Condition

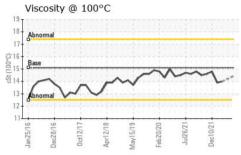
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0109755 GFL0092729 GFL0072391 Sample Date Client Info 11 Mar 2024 08 Nov 2023 24 Jan 2023 Machine Age hrs Client Info 0 24885 24485 Oil Age hrs Client Info NA Not Changd Not Chang	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 11 Mar 2024 08 Nov 2023 24 Jan 2023 Machine Age hrs Client Info 0 24885 24885 Oil Age hrs Client Info 0 198 24452 Oil Changed Client Info N/A Not Changd Not Changd Sample Status Client Info N/A Not Changd Not Changd CONTAMINATION method limit/base current history1 history2 Water WC Method 01 NEG NEG NEG Glycol WC Method 0.0 WEAR METALS method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 23 47 16 Chromium ppm ASTM D5185m<						•	•
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Oil Age hrs Client Info NA 198 24452 Oil Changed Sample Status Client Info N/A Not Changd Not Changd Sample Status Normal SEVERE ABNORMAL CONTAMINATION method limit/base current history2 Water WC Method 0.1 NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 23 47 16 Chromium ppm ASTM D5185m >4 2 2 2 Iron ppm ASTM D5185m >4 2 2 2 Nickel ppm ASTM D5185m >3 0 0 <1	•	hrs					
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WEAR METALS		ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 23 ▲ 47 16 Chromium ppm ASTM D5185m >4 2 2 2 Nickel ppm ASTM D5185m >2 0 <1 0 Titanium ppm ASTM D5185m >3 0 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 <1 <1 Lead ppm ASTM D5185m >30 0 <1 <1 Copper ppm ASTM D5185m >3 17 8 Tin ppm ASTM D5185m >4 0 0 <1 Vanadium ppm ASTM D5185m 0 0 <1 0 Cadmium ppm ASTM D5185m 50 6 51 39 </th <th>Water</th> <th></th> <th>WC Method</th> <th>>0.1</th> <th>NEG</th> <th>NEG</th> <th>NEG</th>	Water		WC Method	>0.1	NEG	NEG	NEG
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Iron	•	S	method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >4 2 2 2 Nickel ppm ASTM D5185m >2 0 <1 0 Titanium ppm ASTM D5185m >3 0 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 0 <1 <1 Aluminum ppm ASTM D5185m >30 0 <1 <1 Copper ppm ASTM D5185m >30 0 <1 <1 Copper ppm ASTM D5185m >35 3 17 8 Tin ppm ASTM D5185m >4 0 0 <1 0 Vanadium ppm ASTM D5185m 0 0 <1 0 Cadmium ppm ASTM D5185m 50 6 51 39 Barium ppm ASTM D5185m 50 6			ASTM D5185m	>50	23	<u>47</u>	16
Nickel							
Titanium ppm ASTM D5185m >3 0 0 <1							
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 3 2 3 Lead ppm ASTM D5185m >30 0 <1							
Aluminum				>3			
Copper ppm ASTM D5185m 33 17 8 Tin ppm ASTM D5185m >4 0 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 50 6 51 39 Barium ppm ASTM D5185m 50 7 0 0 Molybdenum ppm ASTM D5185m 50 54 52 47 Manganese ppm ASTM D5185m 50 700 539 528 Calcium ppm ASTM D5185m 1510 1241 1369 1420 Phosphorus ppm ASTM D5185m 780 819 814 727 Zinc ppm ASTM D5185m 70 1021 881	Aluminum		ASTM D5185m	>9	3	2	
Tin ppm ASTM D5185m >4 0 0 <1	Lead		ASTM D5185m	>30		<1	<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 <1	Copper		ASTM D5185m	>35	3	17	8
Cadmium ppm ASTM D5185m 0 <1			ASTM D5185m	>4	0	0	<1
Boron	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 5 0 7 0 Molybdenum ppm ASTM D5185m 50 54 52 47 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 560 700 539 528 Calcium ppm ASTM D5185m 1510 1241 1369 1420 Phosphorus ppm ASTM D5185m 780 819 814 727 Zinc ppm ASTM D5185m 870 1021 881 860 Sulfur ppm ASTM D5185m 2040 2582 2770 2803 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 54 52 47 Manganese ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m	50	6	51	39
Manganese ppm ASTM D5185m 0 0 <1	Barium	ppm	ASTM D5185m	5	0	7	0
Magnesium ppm ASTM D5185m 560 700 539 528 Calcium ppm ASTM D5185m 1510 1241 1369 1420 Phosphorus ppm ASTM D5185m 780 819 814 727 Zinc ppm ASTM D5185m 870 1021 881 860 Sulfur ppm ASTM D5185m 2040 2582 2770 2803 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7415 >30<	Molybdenum	ppm	ASTM D5185m	50	54	52	47
Calcium ppm ASTM D5185m 1510 1241 1369 1420 Phosphorus ppm ASTM D5185m 780 819 814 727 Zinc ppm ASTM D5185m 870 1021 881 860 Sulfur ppm ASTM D5185m 2040 2582 2770 2803 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >20 2 2 0 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION "ASTM D	Manganese	ppm	ASTM D5185m	0	0	<1	<1
Phosphorus ppm ASTM D5185m 780 819 814 727 Zinc ppm ASTM D5185m 870 1021 881 860 Sulfur ppm ASTM D5185m 2040 2582 2770 2803 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limi	Magnesium	ppm	ASTM D5185m	560	700	539	528
Zinc ppm ASTM D5185m 870 1021 881 860 Sulfur ppm ASTM D5185m 2040 2582 2770 2803 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m >>0 4 6 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25	Calcium	ppm	ASTM D5185m	1510	1241	1369	1420
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CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m 6 4 6 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5		ppm	ASTM D5185m	870	1021	881	860
Silicon ppm ASTM D5185m >+100 7 29 10 Sodium ppm ASTM D5185m 6 4 6 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5	Sulfur	ppm	ASTM D5185m	2040	2582	2770	2803
Sodium ppm ASTM D5185m 6 4 6 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5							
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Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5	Silicon	ppm	ASTM D5185m ASTM D5185m	>+100	7	29 4	10
Nitration Abs/cm *ASTM D7624 >20 9.0 8.1 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5	Silicon Sodium	ppm	ASTM D5185m ASTM D5185m	>+100	7 6	29 4	10 6
Sulfation Abs/.1mm *ASTM D7415 >30 18.4 15.1 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5	Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>+100 >20	7 6 2	29 4 2	10 6 0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5	Silicon Sodium Potassium INFRA-RED	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method	>+100 >20	7 6 2 current	29 4 2 history1	10 6 0 history2
Oxidation Abs/.1mm *ASTM D7414 >25 15.6 14.8 14.5	Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>+100 >20 limit/base	7 6 2 current	29 4 2 history1	10 6 0 history2
	Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>+100 >20 limit/base >20	7 6 2 current 0 9.0	29 4 2 history1 0.1 8.1	10 6 0 history2 0.1 6.7
	Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415	>+100 >20 limit/base >20 >30	7 6 2 current 0 9.0 18.4	29 4 2 history1 0.1 8.1 15.1	10 6 0 history2 0.1 6.7 18.3
	Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	>+100 >20 limit/base >20 >30 limit/base	7 6 2 current 0 9.0 18.4 current	29 4 2 history1 0.1 8.1 15.1 history1	10 6 0 history2 0.1 6.7 18.3



OIL ANALYSIS REPORT

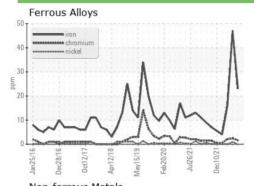


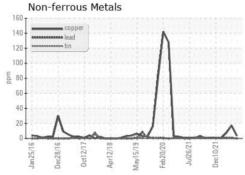


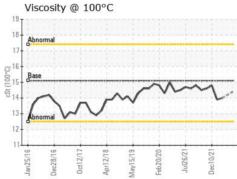
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT	▲ MODER
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	MILKY	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	▲ 0.2%	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

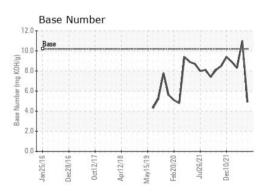
FLUID PROPI	ERIIES	method			history2
Visc @ 100°C	cSt	ASTM D445	15.1	14.4	 14.0

GRAPHS













Laboratory Sample No. Lab Number : 06119351

: GFL0109755 Unique Number : 10928184

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 15 Mar 2024 **Tested** Diagnosed

: 15 Mar 2024 : 15 Mar 2024 - Wes Davis

GFL Environmental - 005 - Wilson/Tri-East(CNG)

2810 Contentnea Road S Wilson, NC

US 27893-8501 Contact: SPENCER LIGGON

spencer.liggon@gflenv.com

T: (800)207-6618

Test Package : FLEET Certificate L2367 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)

Report Id: GFL005 [WUSCAR] 06119351 (Generated: 03/16/2024 05:15:42) Rev: 1

Submitted By: WALTER SKOKOWSKI

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