

PROBLEM SUMMARY

Sample Rating Trend

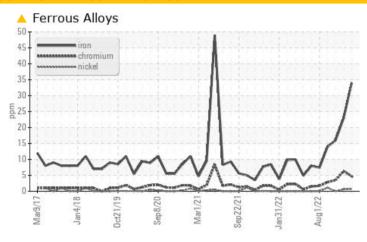


Machine Id 3710C

Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40 (32 QTS)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL		
Chromium	nnm	ASTM D5185m	>4	A 5	<u>^</u> 6	4		

Customer Id: GFL006 Sample No.: GFL0098503 Lab Number: 06006731 Test Package: FLEET To manage this report scan the QR code To discuss the diagnosis or test data: Don Baldridge +1 don.b505@comcast.net To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.

HISTORICAL DIAGNOSIS

07 May 2023 Diag: Don Baldridge

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. The chromium level is abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



30 Nov 2022 Diag: Don Baldridge

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. The copper level has decreased, but is still abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. 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.



03 Oct 2022 Diag: Don Baldridge

WEAR



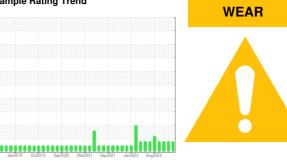
No corrective action is recommended at this time. Resample at the next service interval to monitor. The copper level has decreased, but is still abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.





OIL ANALYSIS REPORT

Sample Rating Trend



3710C Component

Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (32 QTS)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

The chromium level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the

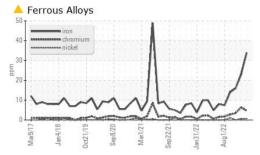
Fluid Condition

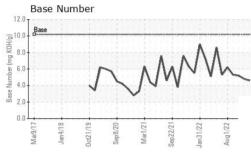
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

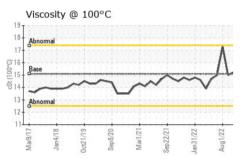
Sample Date Client Info 13 Nov 2023 30 Nov 2023 30 Nov 2022 30 Nov 2022	(32 QTS)						
Sample Date Client Info 13 Nov 2023 30 Nov 2023 30 Nov 2022 30 Nov 2022	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0098503	GFL0073778	GFL0062777
Dil Age	Sample Date		Client Info		13 Nov 2023	07 May 2023	30 Nov 2022
Clic Changed Client Info Changed ABNORMAL ABNORMAL	Machine Age	hrs	Client Info		15278	13834	12953
Sample Status ABNORMAL ABSTOP2 Iron ppm ASTM D5185m >4 5 4 6 4 1 0 <	Oil Age	hrs	Client Info		618	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 34 23 16 Chromium ppm ASTM D5185m >4 5 6 4 Nickel ppm ASTM D5185m >2 <1	Oil Changed		Client Info		Changed	N/A	N/A
ASTM D5185m So So So So So So So S	Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
Chromium	WEAR METALS	3	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	34	23	16
Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >9 4 2 3 Lead ppm ASTM D5185m >30 8 <1 8 Copper ppm ASTM D5185m >30 8 <1 8 Copper ppm ASTM D5185m >35 8 20 △ 39 Tin ppm ASTM D5185m 0 0 0 0 1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 50 11 13 9 Barium ppm ASTM D5185m 50 62 52 55 Manganese ppm ASTM D5185m 50 62 583 579 Calcium ppm ASTM D5185m	Chromium	ppm	ASTM D5185m	>4	<u> 5</u>	<u></u> 6	4
Silver	Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum ppm ASTM D5185m >9 4 2 3 Lead ppm ASTM D5185m >30 8 <1 8 Copper ppm ASTM D5185m >35 8 20 ▲ 39 Tin ppm ASTM D5185m >4 <1 0 <1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 50 11 13 9 Barium ppm ASTM D5185m 50 6 0 0 Molybdenum ppm ASTM D5185m 50 62 52 55 Manganese ppm ASTM D5185m 50 62 52 55 Manganese ppm ASTM D5185m 50 580 583 579 Calcium ppm ASTM D5185m 1510 1734 1576 1755 Phosphorus ppm ASTM D5185m 780 795 751 728 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % 'ASTM D7824 >20 11.6 9.3 13.3 Sulfation Abs/.tmm 'ASTM D7845 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.tmm 'ASTM D7844 >20 11.6 9.3 13.3 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.tmm 'ASTM D7844 >20 11.6 9.3 13.3 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.tmm 'ASTM D7844 >20 20.9 16.9 22.3	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >30 8 <1 8 Copper ppm ASTM D5185m >35 8 20 △ 39 Tin ppm ASTM D5185m >4 <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 50 11 13 9 Boron ppm ASTM D5185m 50 6 0 0 Boron ppm ASTM D5185m 50 62 52 55 Boron ppm ASTM D5185m 50 62 52 55 Magnesium ppm ASTM D5185m 50 580 583 579 Calcium ppm ASTM D5185m 1510 1734 1576	Silver	ppm	ASTM D5185m	>3	<1	0	0
Copper ppm ASTM D5185m >35 8 20 39 Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>9	4	2	3
Tin	Lead	ppm	ASTM D5185m	>30	8	<1	8
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 11 13 9 Barium ppm ASTM D5185m 50 62 52 55 Molybdenum ppm ASTM D5185m 50 62 52 55 Manganese ppm ASTM D5185m 50 62 52 55 Manganesium ppm ASTM D5185m 560 580 583 579 Calcium ppm ASTM D5185m 780 795 751 728 Phosphorus ppm ASTM D5185m 870 1002 964 940 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>35	8	20	△ 39
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 11 13 9 Barium ppm ASTM D5185m 5 6 0 0 Molybdenum ppm ASTM D5185m 50 62 52 55 Manganese ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>4	<1	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 62 52 55 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	50	11	13	9
Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 560 580 583 579 Calcium ppm ASTM D5185m 1510 1734 1576 1755 Phosphorus ppm ASTM D5185m 780 795 751 728 Zinc ppm ASTM D5185m 870 1002 964 940 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844	Barium	ppm	ASTM D5185m	5	6	0	0
Magnesium ppm ASTM D5185m 560 580 583 579 Calcium ppm ASTM D5185m 1510 1734 1576 1755 Phosphorus ppm ASTM D5185m 780 795 751 728 Zinc ppm ASTM D5185m 870 1002 964 940 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm			62	52	55
Calcium ppm ASTM D5185m 1510 1734 1576 1755 Phosphorus ppm ASTM D5185m 780 795 751 728 Zinc ppm ASTM D5185m 870 1002 964 940 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base </td <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td><1</td> <td>1</td> <td><1</td>	Manganese	ppm	ASTM D5185m	0	<1	1	<1
Phosphorus ppm ASTM D5185m 780 795 751 728 Zinc ppm ASTM D5185m 870 1002 964 940 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/b	Magnesium	ppm	ASTM D5185m	560			
Zinc ppm ASTM D5185m 870 1002 964 940 Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m 11 5 10 Potassium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25	Calcium	ppm	ASTM D5185m	1510			
Sulfur ppm ASTM D5185m 2040 2579 2636 2562 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m 11 5 10 Potassium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	Phosphorus	ppm	ASTM D5185m	780	795	751	728
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 5 Sodium ppm ASTM D5185m 11 5 10 Potassium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	Zinc	ppm	ASTM D5185m	870	1002	964	940
Silicon ppm ASTM D5185m >+100 6 6 5	Sulfur	ppm	ASTM D5185m	2040	2579	2636	2562
Sodium ppm ASTM D5185m 11 5 10 Potassium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 14 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	Silicon	ppm	ASTM D5185m	>+100	6	6	5
INFRA-RED	Sodium	ppm	ASTM D5185m		11	5	10
Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	Potassium	ppm	ASTM D5185m	>20	14	3	0
Nitration Abs/cm *ASTM D7624 >20 11.6 9.3 13.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 23.9 19.6 24.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	Soot %	%	*ASTM D7844		0	0	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 16.9 22.3	Nitration	Abs/cm	*ASTM D7624	>20	11.6	9.3	13.3
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30		19.6	24.8
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 4.6 4.8 5.2	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.9	16.9	22.3
	Base Number (BN)		ASTM D2896	10.2	4.6	4.8	5.2



OIL ANALYSIS REPORT



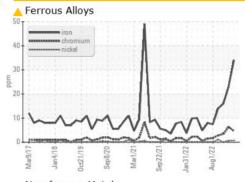


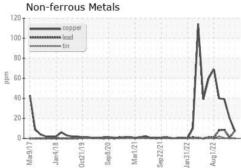


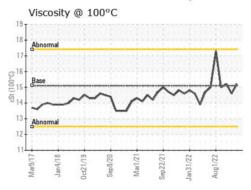
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

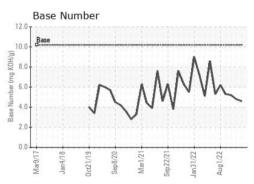
FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	15.2	14.6	15.2

GRAPHS













Certificate L2367

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0098503 : 06006731 : 10740493

Received Diagnosed Diagnostician : Don Baldridge

: 14 Nov 2023 : 15 Nov 2023 GFL Environmental - 006 - Wilmington

3618 US Highway 421 N Wilmington, NC US 28401 Contact: Eric Wood eric.wood@gflenv.com

> T: (717)723-1956 F: (910)762-6880

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)