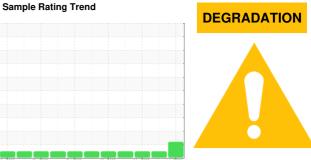


PROBLEM SUMMARY



Machine Id 731123

Component **Natural Gas Engine**

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

COMPONENT CONDITION SUMMARY

No relevant graphs to display

RECOMMENDATION

The oil is near the end of it's useful service life, recommend schedule an oil change. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS							
Sample Status				MARGINAL	NORMAL	NORMAL	
Base Number (BN)	mg KOH/g	ASTM D2896	10.2	△ 3.1	5.4	8.8	

Customer Id: GFL836 Sample No.: GFL0083754 Lab Number: 05899645 Test Package: FLEET

To manage this report scan the QR code

To discuss the diagnosis or test data: Doug Bogart +1 (800)237-1369 x4016 dougb@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Service/change Fluid			?	The oil is near the end of it's useful service life, recommend schedule an oil change.

HISTORICAL DIAGNOSIS

08 Jun 2023 Diag: Wes Davis





Resample at the next service interval to monitor. All 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.



31 May 2023 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. All 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.



27 Apr 2023 Diag: Wes Davis

NORMAL



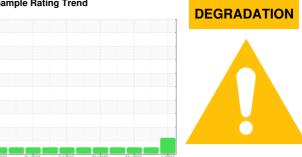
Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 731123 Component

Natural Gas Engine

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

DIAGNOSIS

Recommendation

The oil is near the end of it's useful service life. recommend schedule an oil change. Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

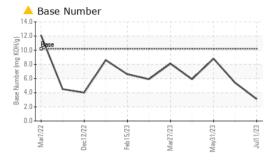
Fluid Condition

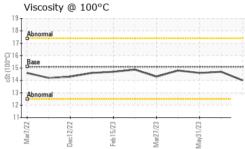
The BN level is low.

Sample Date	GAL)		Mar2022	Dec2022 Feb2023	Mar2023 May2023	Jul2023	
Sample Date Client Info 11 Jul 2023 08 Jun 2023 31 May 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 4993 4789 4731 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info Not Changd Not Changd Not Changd Sample Status method limit/base current history1 history2 Iron ASTM D5185m >50 29 9 2 1 <1	Sample Number		Client Info		GFL0083754	GFL0083737	GFL0083810
Oil Age hrs Client Info Not Changd Not Changd	Sample Date		Client Info		11 Jul 2023	08 Jun 2023	31 May 2023
Not Changed Sample Status	Machine Age	hrs	Client Info		4993	4789	4731
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 29 9 2 Chromium ppm ASTM D5185m >4 2 <1	Oil Age	hrs	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 29 9 2 Chromium ppm ASTM D5185m >4 2 <1	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Iron	Sample Status				MARGINAL	NORMAL	NORMAL
Chromium ppm ASTM D5185m >4 2 <1 <1 Nickel ppm ASTM D5185m >2 1 0 0 Titanium ppm ASTM D5185m >2 1 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 3 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	29	9	2
Titanium	Chromium	ppm	ASTM D5185m	>4	2	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	1	0	0
Aluminum ppm ASTM D5185m >9 3 <1 <1 Lead ppm ASTM D5185m >30 18 1 0 Copper ppm ASTM D5185m >35 2 1 1 Tin ppm ASTM D5185m >4 1 <1	Titanium	ppm	ASTM D5185m		<1	0	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >35 2 1 1 Tin ppm ASTM D5185m >4 1 <1	Aluminum	ppm	ASTM D5185m	>9	3	<1	<1
Tin	Lead	ppm	ASTM D5185m	>30	18	1	0
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 6 12 49 Barium ppm ASTM D5185m 50 60 0 0 Molybdenum ppm ASTM D5185m 50 60 54 47 Manganese ppm ASTM D5185m 50 60 54 47 Manganesium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m >+100 7 4 6 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>35	2	1	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 12 49 Barium ppm ASTM D5185m 50 0 0 0 Molybdenum ppm ASTM D5185m 50 60 54 47 Manganese ppm ASTM D5185m 50 60 54 47 Magnesium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 1510 1639 1715 1486 Phosphorus ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m >40 2567 2861 2958 CONTAMINANTS method limit/base current <t< td=""><td>Tin</td><td>ppm</td><td>ASTM D5185m</td><td>>4</td><th>1</th><td><1</td><td>0</td></t<>	Tin	ppm	ASTM D5185m	>4	1	<1	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 12 49 Barium ppm ASTM D5185m 50 0 0 0 Molybdenum ppm ASTM D5185m 50 60 54 47 Manganese ppm ASTM D5185m 50 60 54 47 Magnesium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 50 6 12 49	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 50 60 54 47 Manganese ppm ASTM D5185m 50 562 581 567 Calcium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 780 725 716 756 Phosphorus ppm ASTM D5185m 870 981 998 932 Zinc ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 60 54 47 Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history1 history2 Soot % * ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7414 >25 <	Boron	ppm	ASTM D5185m	50	6	12	49
Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 1510 1639 1715 1486 Phosphorus ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	Barium	ppm	ASTM D5185m	5	0	0	0
Magnesium ppm ASTM D5185m 560 562 581 567 Calcium ppm ASTM D5185m 1510 1639 1715 1486 Phosphorus ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7815 >30 <th< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>50</td><th>60</th><td>54</td><td>47</td></th<>	Molybdenum	ppm	ASTM D5185m	50	60	54	47
Calcium ppm ASTM D5185m 1510 1639 1715 1486 Phosphorus ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	Manganese	ppm	ASTM D5185m		1		
Phosphorus ppm ASTM D5185m 780 725 716 756 Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m >20 2 1 <1	Magnesium	ppm					
Zinc ppm ASTM D5185m 870 981 998 932 Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m 8 6 2 Potassium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5	Calcium	ppm	ASTM D5185m	1510	1639	1715	1486
Sulfur ppm ASTM D5185m 2040 2567 2861 2958 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m 8 6 2 Potassium ppm ASTM D5185m >20 2 1 <1	Phosphorus	ppm	ASTM D5185m	780		716	756
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m 8 6 2 Potassium ppm ASTM D5185m >20 2 1 <1	Zinc	ppm	ASTM D5185m	870	981		
Silicon ppm ASTM D5185m >+100 7 4 6 Sodium ppm ASTM D5185m 8 6 2 Potassium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	Sulfur	ppm	ASTM D5185m	2040	2567	2861	2958
Sodium ppm ASTM D5185m 8 6 2 Potassium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	Silicon	ppm	ASTM D5185m	>+100	7	4	6
INFRA-RED	Sodium	ppm	ASTM D5185m		8	6	2
Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	Potassium	ppm	ASTM D5185m	>20	2	1	<1
Nitration Abs/cm *ASTM D7624 >20 11.8 10.5 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 25.2 21.1 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	Soot %	%	*ASTM D7844		0	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	Nitration	Abs/cm	*ASTM D7624	>20	11.8	10.5	5.9
Oxidation Abs/.1mm *ASTM D7414 >25 20.5 17.6 14.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	25.2	21.1	18.9
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 ▲ 3.1 5.4 8.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.5	17.6	14.7
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	△ 3.1	5.4	8.8



OIL ANALYSIS REPORT

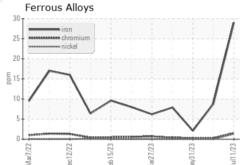


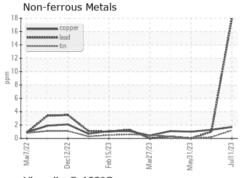


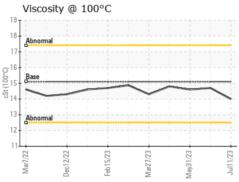
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

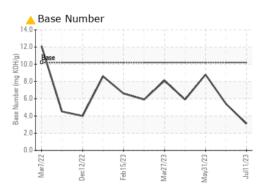
FLUID PROP	EHIIES	method	iiiiii/base	current	riistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	15.1	14.0	14.7	14.6

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10561001

: GFL0083754 : 05899645 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 17 Jul 2023 Received

Diagnosed : 18 Jul 2023 Diagnostician : Doug Bogart GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road Kansas City, MO US 64126

Contact: Robert Hart rhart@gflenv.com T: (580)461-1509

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: GFL836 [WUSCAR] 05899645 (Generated: 07/18/2023 21:12:30) Rev: 1

Contact/Location: See also GFL823, 834, 837, 840 - Robert Hart - GFL836