

PROBLEM SUMMARY



Machine Id **731114** Component **Natural Gas Engine** Fluid **PETRO CANADA DURON GEO LD 15W40 (--- GAL)**

COMPONENT CONDITION SUMMARY



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 ABNORMAL NORMAL NORMAL								
Iron	ppm	ASTM D5185m	>50	<u> </u>	9	15		
Chromium	ppm	ASTM D5185m	>4	4 9	<1	2		
Base Number (BN)	mg KOH/g	ASTM D2896	10.2	<u> </u>	3.0	5.0		

Customer Id: GFL836 Sample No.: GFL0099975 Lab Number: 06029130 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 jhester@wearcheckusa.com

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

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.			
Resample			?	We recommend an early resample to monitor this condition.			

HISTORICAL DIAGNOSIS



07 Nov 2023 Diag: Sean Felton

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.



view report

03 Oct 2023 Diag: Don Baldridge



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.

06 Sep 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.







OIL ANALYSIS REPORT



DEGRADATION

Machine Id 731114

Component Natural Gas Engine

Fluid

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.

🔺 Wear

Ring and cylinder wear is indicated.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN level is low. The condition of the oil is acceptable for the time in service.

			DEC	RADATION
1.2022 Nov2022	Junite23 Mar2023 April	1 Jun2023 Aug2023 (tatītā bežītā.	
method	limit/base	current	history1	history2
liont Info			CEL 0005191	CEL 0005107

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0099975	GFL0095181	GFL0095107
Sample Date		Client Info		06 Dec 2023	07 Nov 2023	03 Oct 2023
Machine Age	hrs	Client Info		6565	6397	6217
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	<u> </u>	9	15
Chromium	ppm	ASTM D5185m	>4	<u> </u>	<1	2
Nickel	ppm	ASTM D5185m	>2	5	<1	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	14	2	11
Lead	ppm	ASTM D5185m	>30	11	6	1
Copper	ppm	ASTM D5185m	>35	3	2	3
Tin	ppm	ASTM D5185m	>4	2	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 8	<mark>history1</mark> 9	history2 15
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 50 5	current 8 0	history1 9 0	history2 15 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 5 50	current 8 0 76	history1 9 0 55	history2 15 0 53
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 5 50 0	current 8 0 76 4	history1 9 0 55 <1	history2 15 0 53 1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 5 50 0 560	current 8 0 76 4 654	history1 9 0 55 <1 598	history2 15 0 53 1 572
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 50 50 0 560 1510	Current 8 0 76 4 654 1867	history1 9 0 55 <1 598 1602	history2 15 0 53 1 572 1463
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	methodASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185m	limit/base 50 50 0 560 1510 780	Current 8 0 76 4 654 1867 827	history1 9 0 55 <1 598 1602 766	history2 15 0 53 1 572 1463 716
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 50 0 560 1510 780 870	Current 8 0 76 4 654 1867 827 1072	history1 9 0 55 <1 598 1602 766 1025	history2 15 0 53 1 572 1463 716 936
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 50 0 560 1510 780 870 2040	current 8 0 76 4 654 1867 827 1072 2499	history1 9 0 55 <1 598 1602 766 1025 2518	history2 15 0 53 1 572 1463 716 936 2571
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 50 0 560 1510 780 870 2040 limit/base	current 8 0 76 4 654 1867 827 1072 2499 current	history1 9 0 55 <1 598 1602 766 1025 2518 history1	history2 15 0 53 1 572 1463 716 936 2571 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 50 50 0 560 1510 780 870 2040 limit/base >+100	current 8 0 76 4 654 1867 827 1072 2499 current 55	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5	history2 15 0 53 1 572 1463 716 936 2571 history2 22
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 50 5 50 0 560 1510 780 870 2040 limit/base >+100	current 8 0 76 4 654 1867 827 1072 2499 current 55 14	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 50 50 0 560 1510 780 870 2040 limit/base >+100	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	limit/base 50 50 0 560 1510 780 870 2040 limit/base >+100 >20 limit/base	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5 current	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2 history1	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 50 50 0 560 1510 780 870 2040 limit/base >+100 >20 limit/base	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5 current 0.1	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2 history1 0	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32 history2 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	method ASTM D5185m	limit/base 50 5 50 0 560 1510 780 870 2040 limit/base >+100 ->20 limit/base	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5 current 0.1 13.1	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2 history1 0 11.9	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32 history2 0 9.7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	<pre>limit/base 50 50 50 0 560 1510 780 870 2040 limit/base >+100</pre>	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5 current 0.1 13.1 28.4	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2 history1 0 11.9 26.0	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32 history2 0 9.7 20.3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	<pre>limit/base 50 50 50 0 560 1510 780 870 2040 limit/base >+100</pre>	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5 current 0.1 13.1 28.4	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2 history1 0 11.9 26.0 history1	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32 history2 0 9.7 20.3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7415 *ASTM D7414	<pre>limit/base 50 5 5 50 0 560 1510 780 870 2040 limit/base >+100</pre>	current 8 0 76 4 654 1867 827 1072 2499 current 55 14 5 current 0.1 13.1 28.4 current 25.0	history1 9 0 55 <1 598 1602 766 1025 2518 history1 5 7 2 history1 0 11.9 26.0 history1 20.8	history2 15 0 53 1 572 1463 716 936 2571 history2 22 4 32 history2 0 9.7 20.3 history2 17.8



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13 Abnorma 12 11

. Mar24/22

Nov15/22

Jan10/23 Mar23/23

OIL ANALYSIS REPORT

method

limit/base

current

VISUAL



					White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
					Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
					Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
\sim		~	-	\wedge	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	-			\sim	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
					Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
3/23	5/23	9/23	6/23	t3/23 5/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Mar2	Apr2	Jun2	Aug1	Dec	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
					Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
					Free Water	scalar	*Visual		NEG	NEG	NEG
				1	FLUID PROP	ERTIES	method	limit/base	current	history1	history2
					Visc @ 100°C	cSt	ASTM D445	15.1	14.3	14.4	14.2
		\wedge			GRAPHS						
		/			Ferrous Alloys						
O Mar23/23	Apr25/23	Jun29/23	Aug16/23	0ct3/23	100 100 100 100 100 100 100 100	Apr25/23	Aug 16/23	Dec6/23			
Mar23	Apr25	Jun29	Aug16	0650	Copper lead 15 0 27/52m Viscority @ 1000	Apr25/23	Aug 16/23	Dech/2			
					¹⁹ T			12	A Base Number		
					18 Abnormal			12	Base		
					17- 			ber (mg KOH/g)			
					12			IN as	.0	$\neg \checkmark$	\sim
					Abnormal			2	.0		
					11			0	.0		
					24/22 15/22 10/23	25/23	t3/23 .	c6/23	24/22 15/22 10/23	23/23 25/23 29/23	16/23 :t3/23 :c6/23
					Mari Nov	Apr	Aug	De	Mar. Nov Jan	Mar Apr. Junz	Aug Oc Dev
Cerr To	tificate L23	B 867 Ss this	Labo Sam Lab Uniqu Test	pratory ple No. Number Je Number Package ble report.	: WearCheck USA - : GFL0099975 : 06029130 : 10778921 : FLEET contact Customer Sei	501 Madis Received Diagnose Diagnost	son Ave., Ca I : 08 I ed : 13 I ician : Jon 00-237-1369	ry, NC 2751 Dec 2023 Dec 2023 athan Heste D	3 GFL Envir o	onmental - 836 - Ka 7801 Eas Ka Conta rha	ansas City Hauling t Truman Road ansas City, MO US 64126 act: Robert Hart urt@gflenv.com
* -	Denote	es tes	t meth	nods that a	are outside of the ISO	17025 sco	pe of accred	litation.		T:	(580)461-1509
Sta	temen	ts of c	onforn	nity to spec	cifications are based on	the simple	acceptance o	decision rule	(JCGM 106:2012)		F:

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

history2

history1