

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 933021

Component **Natural Gas Engine**

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

DIAGNOSIS

Recommendation

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 oil.

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.

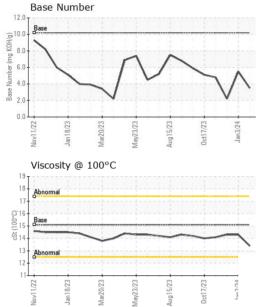
GAL)									
SAMPLE INFOF	RMATION	method	limit/base	current	history1	history2			
Sample Number		Client Info		GFL0108132	GFL0103286	GFL0099914			
Sample Date		Client Info		21 Jan 2024	03 Jan 2024	06 Dec 2023			
Machine Age	hrs	Client Info		3565	3430	3251			
Oil Age	hrs	Client Info		0	0	0			
Oil Changed		Client Info		Changed	Not Changd	Not Changd			
Sample Status				NORMAL	NORMAL	ABNORMAL			
CONTAMINA	ΓΙΟΝ	method	limit/base	current	history1	history2			
Water		WC Method	>0.1	NEG	NEG	NEG			
WEAR METAI	_S	method	limit/base	current	history1	history2			
Iron	ppm	ASTM D5185m	>50	8	10	1 02			
Chromium	ppm	ASTM D5185m	>4	2	1	<u> </u>			
Nickel	ppm	ASTM D5185m	>2	<1	<1	4 5			
Titanium	ppm	ASTM D5185m		<1	0	<1			
Silver	ppm	ASTM D5185m	>3	0	0	0			
Aluminum	ppm	ASTM D5185m	>9	4	2	1 4			
Lead	ppm	ASTM D5185m	>30	6	3	10			
Copper	ppm	ASTM D5185m	>35	3	<1	3			
Tin	ppm	ASTM D5185m	>4	1	1	2			
Vanadium	ppm	ASTM D5185m		0	0	<1			
Cadmium	ppm	ASTM D5185m		<1	0	0			
ADDITIVES						h la ta muQ			
ADDITIVES		method				history2			
Boron	ppm	method ASTM D5185m	limit/base	current 4	history1 12	nistory2 8			
	ppm ppm								
Boron		ASTM D5185m	50	4	12	8			
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5 50	4 0	12 <1	8 0			
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	4 0 53	12 <1 51	8 0 75			
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	4 0 53 <1	12 <1 51 <1	8 0 75 4			
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	4 0 53 <1 576	12 <1 51 <1 551	8 0 75 4 647			
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	4 0 53 <1 576 1460	12 <1 51 <1 551 1564	8 0 75 4 647 1854			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	4 0 53 <1 576 1460 664	12 <1 51 <1 551 1564 792	8 0 75 4 647 1854 832			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870	4 0 53 <1 576 1460 664 970 2229	12 <1 51 <1 551 1564 792 963	8 0 75 4 647 1854 832 1063			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 limit/base	4 0 53 <1 576 1460 664 970 2229	12 <1 51 <1 551 1564 792 963 2452	8 0 75 4 647 1854 832 1063 2484			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 limit/base	4 0 53 <1 576 1460 664 970 2229 current	12 <1 51 <1 551 1564 792 963 2452 history1	8 0 75 4 647 1854 832 1063 2484 history2			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	4 0 53 <1 576 1460 664 970 2229 current 11	12 <1 51 <1 551 1564 792 963 2452 history1 4	8 0 75 4 647 1854 832 1063 2484 history2 55			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm NTS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	4 0 53 <1 576 1460 664 970 2229 current 11 0 2	12 <1 51 <1 551 1564 792 963 2452 history1 4 7	8 0 75 4 647 1854 832 1063 2484 history2 55 14			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm NTS	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 limit/base >+100	4 0 53 <1 576 1460 664 970 2229 <u>current</u> 11 0 2	12 <1 51 <51 551 1564 792 963 2452 history1 4 7 0	8 0 75 4 647 1854 832 1063 2484 history2 55 14 55			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Imit/base >+100 >20 Imit/base	4 0 53 <1 576 1460 664 970 2229 <u>current</u> 11 0 2 2 <u>current</u>	12 <1 51 551 1564 792 963 2452 history1 4 7 0 0	8 0 75 4 647 1854 832 1063 2484 history2 55 14 55 14 5 5 history2			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Imit/base >+100 >20 Imit/base	4 0 53 <1 576 1460 664 970 2229 <u>current</u> 11 0 2 2 <u>current</u> 0	12 <1 51 <1 551 1564 792 963 2452 history1 4 7 0 history1 0.1	8 0 75 4 647 1854 832 1063 2484 history2 55 14 55 14 5 5 history2 0.1			
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 vTS ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 imit/base >+100 20 imit/base	4 0 53 <1 576 1460 664 970 2229 <u>current</u> 11 0 2 2 <u>current</u> 0 11.9 24.4	12 <1 51 <51 551 1564 792 963 2452 history1 4 7 0 history1 0.1 0.1 10.6	8 0 75 4 647 1854 832 1063 2484 history2 55 14 55 14 5 5 history2 0.1 13.1			
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 vTS ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 560 1510 780 870 2040 Iinit/base >20 Iinit/base >20 Iinit/base	4 0 53 <1 576 1460 664 970 2229 <u>current</u> 11 0 2 2 <u>current</u> 0 11.9 24.4	12 <1 51 551 551 1564 792 963 2452 history1 4 7 0 0 history1 0.1 10.6 22.2	8 0 75 4 647 1854 832 1063 2484 history2 55 14 55 14 55 14 55 0.1 13.1 28.4			
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm ppm ppm ppm ppm ppm ppm vTS ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	50 50 560 1510 780 870 2040 imit/base >+100 220 imit/base >20 30 imit/base	4 0 53 <1 576 1460 664 970 2229 current 11 0 2 2 current 0 11.9 24.4 current	12 <1 51 <51 551 1564 792 963 2452 history1 4 7 0 history1 0.1 10.6 22.2 history1	8 0 75 4 647 1854 832 1063 2484 history2 55 14 55 14 55 history2 0.1 13.1 28.4 history2			



Nov11/22

OIL ANALYSIS REPORT

VISUAL



Mar20/23

		VISUAL		memou	iiiiii/base	Current	TIISLOTYT	TISIOT YZ
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$n \wedge$		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
V	$\neg \land$	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	V `	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
		Sand/Dirt		*Visual	NONE	NONE	NONE	NONE
/23 -	/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May23/23 Aug15/23	0ct17/23 Jan3/24	Odor		*Visual	NORML	NORML	NORML	NORML
2 4		Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
					>0.1			
		Free Water		*Visual		NEG	NEG	NEG
		FLUID PROPE		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.1	13.4	14.3	14.3
		GRAPHS						
		Ferrous Alloys						
/23 -	t17/23	iron						
May23/23 Aug15/23	0ct17/23	nickel		٨				
		80-		1				
		톮 60-						
		40	Λ					
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		20	11					
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		Nov11/22 Jan18/23 Mar20/23	May23/23 Aud15/23	0ct17/23	Jan3/24			
		Nov Jan	May	Oct	Jai			
		Non-ferrous Metal	S					
		16 copper j	A					
		14 - Lead	1					
		12 tin	11					
		10	11	A				
		Ed 8-	11	/				
		6-	1.1.		1.			
			1		V			
		2	DI	~ h	1			
		O THEREAL	s D		A			
		Nov11/22 Jan18/23 Mar20/23	3/23	0ct17/23	Jan3/24			
		Nov11/22 Jan18/23 Mar20/23	May23/23	Oct1	Jan			
		Viscosity @ 100°C				D		
						Base Number		
		¹⁹ T			12.0 -	Dase Number		
		18			12.0			
					10.0	Base		
		18 Abnormal 17-			10.0			
		18 Abnormal 17-			10.0			
		18 Abnormal 17-			10.0		N	
		Abnormal			10.0		N	
		Abnormal			10.0- (B) No (Minup set (Minup se		N	$\overline{\checkmark}$
		Abnormal			(0)HOX (0)HOX but 4.0- 4.0- 2.0-		N	
		Abnormal	23	3	10.0 (b)(N) 8.0 (b)(N) 9 (b)(0) (b)(N) 9 (b)(0) (b)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)	Вазе		
		Abnormal	v(23/23	#17/23	10.0 (b)(N) 8.0 (b)(N) 9 (b)(0) (b)(N) 9 (b)(0) (b)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)	Вазе	y23/23 915/23	#17/23
		Abnormal	Mar(23/23	0et17/23 +	(0)HOX (0)HOX but 4.0- 4.0- 2.0-		May23/23	0et17/23
		18 Abnormal 10 10 10 10 10 10 10 10 10 10			10.0 8.0 6.0 4.0 8.0 4.0 4.0 0.0 4.0 0.0	Base 1 an 16/23 Mar 20/27 Mar		
4	Laboratory	Abnomal 10 10 10 10 10 10 10 10 10 10	501 Madis	on Ave., Ca	10.0- (0)HOX Bull 4.0- 4.0- +72(Eller) ry, NC 27513	Base 1 an 16/23 Mar 20/27 Mar	onmental - 836 - Ka	insas City Hauli
NAB	Laboratory Sample No.	Base 10 10 10 10 10 10 10 10 10 10	501 Madis Recieved	on Ave., Ca : 02 F	10.0- (0)HOX BU 4.0- 4.0- 4.0- 4.0- 4.0- 4.0- 0.0- 7, NC 27513 Feb 2024	Base 1 an 16/23 Mar 20/27 Mar	onmental - 836 - K a 7801 Easi	insas City Hauli t Truman Roa
	Laboratory Sample No. Lab Number	Base 10 10 10 10 10 10 10 10 10 10	501 Madis Recieved Diagnose	on Ave., Ca : 02 f :d : 05 f	10.0- 10	Base 1 an 16/23 Mar 20/27 Mar	onmental - 836 - K a 7801 Easi	in sas City Hauli t Truman Roa ansas City, M
	Laboratory Sample No. Lab Number Unique Number	Base 10 10 10 10 10 10 10 10 10 10	501 Madis Recieved	on Ave., Ca : 02 f :d : 05 f	10.0- (0)HOX BU 4.0- 4.0- 4.0- 4.0- 4.0- 4.0- 0.0- 7, NC 27513 Feb 2024	Base 1 an 16/23 Mar 20/27 Mar	onmental - 836 - Ka 7801 Easi Ka	nsas City Hauli t Truman Roa ansas City, M US 6412
tificate 12367	Laboratory Sample No. Lab Number Unique Number Test Package	Base 10 10 10 10 10 10 10 10 10 10	501 Madis Recieved Diagnose Diagnosti	on Ave., Ca : 02 F ed : 05 F cian : Wes	10.0- 10	Base 1 an 16/23 Mar 20/27 Mar	onmental - 836 - Ka 7801 Easi Ka Conta	insas City Hauli t Truman Roa

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