

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 945014-260271

Component Natural Gas Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

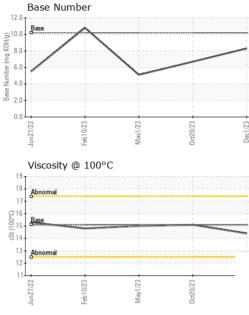
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		UNILULL	1002020	11172020 0012020		
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092009	GFL0084619	GFL0078123
Sample Date		Client Info		01 Dec 2023	20 Oct 2023	01 May 2023
Machine Age	hrs	Client Info		61112	69973	636203
Oil Age	hrs	Client Info		600	0	0
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	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	5	7	8
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>9	1	2	1
Lead	ppm	ASTM D5185m	>30	0	<1	0
Copper	ppm	ASTM D5185m	>35	0	<1	1
Tin	ppm	ASTM D5185m	>4	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 50	current 38	history1 17	history2 13
	ppm ppm					
Boron		ASTM D5185m	50	38	17	13
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	38 2	17 3	13 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	38 2 48	17 3 54	13 0 51
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	38 2 48 0	17 3 54 <1	13 0 51 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	38 2 48 0 514	17 3 54 <1 561	13 0 51 <1 648
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	38 2 48 0 514 1435	17 3 54 <1 561 1582	13 0 51 <1 648 1521
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	50 5 50 0 560 1510 780	38 2 48 0 514 1435 714	17 3 54 <1 561 1582 758	13 0 51 <1 648 1521 760
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	38 2 48 0 514 1435 714 859 2413	17 3 54 <1 561 1582 758 969	13 0 51 <1 648 1521 760 1023
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 00 560 1510 780 870 2040	38 2 48 0 514 1435 714 859 2413	17 3 54 <1 561 1582 758 969 2705	13 0 51 <1 648 1521 760 1023 2933
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 00 560 1510 780 870 2040 >+100	38 2 48 0 514 1435 714 859 2413 current	17 3 54 <1 561 1582 758 969 2705 history1	13 0 51 <1 648 1521 760 1023 2933 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	38 2 48 0 514 1435 714 859 2413 current 6	17 3 54 <1 561 1582 758 969 2705 history1 4	13 0 51 <1 648 1521 760 1023 2933 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	38 2 48 0 514 1435 714 859 2413 current 6 2 1	17 3 54 <1 561 1582 758 969 2705 history1 4 1	13 0 51 <1 648 1521 760 1023 2933 history2 5 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 limit/base >+100	38 2 48 0 514 1435 714 859 2413 current 6 2 1	17 3 54 <1 561 1582 758 969 2705 history1 4 1 2	13 0 51 <1 648 1521 760 1023 2933 history2 5 3 3 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Imit/base >+100 >20 Imit/base	38 2 48 0 514 1435 714 859 2413 current 6 2 1 1	17 3 54 <1 561 1582 758 969 2705 history1 4 1 2 2 history1	13 0 51 <1 648 1521 760 1023 2933 history2 5 3 <1 *
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Imit/base >+100 >20 Imit/base	38 2 48 0 514 1435 714 859 2413 <u>current</u> 6 2 1 1 <u>current</u> 0	17 3 54 <1 561 1582 758 969 2705 history1 4 1 2 history1 0	13 0 51 <1 648 1521 760 1023 2933 history2 5 3 <1 5 3 <1 history2 0
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 ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 Iimit/base >+100 20 Iimit/base	38 2 48 0 514 1435 714 859 2413 <u>current</u> 6 2 2 1 <u>current</u> 0 6.8 18.7	17 3 54 <1 561 1582 758 969 2705 history1 4 1 2 history1 0 9.5	13 0 51 <1 648 1521 760 1023 2933 history2 5 3 3 <1 history2 0 9.2
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	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Iimit/base >+100 20 Iimit/base >20 30	38 2 48 0 514 1435 714 859 2413 current 6 2 1 current 0 6.8 18.7	17 3 54 <1 561 1582 758 969 2705 history1 4 1 2 2 history1 0 9.5 20.7	13 0 51 <1 648 1521 760 1023 2933 history2 5 3 <1 5 3 <1 history2 0 9.2 19.2
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	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	50 50 0 560 1510 780 870 2040 Iimit/base >+100 20 Iimit/base >20 30	38 2 48 0 514 1435 714 859 2413 <i>current</i> 6 2 1 <i>current</i> 0 6.8 18.7	17 3 54 <1 561 1582 758 969 2705 history1 4 1 2 history1 0 9.5 20.7 history1	13 0 51 <1 648 1521 760 1023 2933 history2 5 3 <1 5 3 <1 history2 0 9.2 19.2 19.2 history2



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VISUAL



	Laboratory Sample No. Lab Number Unique Number	: WearCheck USA - : GFL0092009 : 06025592 : 10770092	501 Madis Received Diagnose	: 05	ry, NC 2751: Dec 2023 Dec 2023	3 GFL Envi	GFL Environmental - 856 - Houston South 8515 Highway 6 South Houston, TX US 77083 Contact: Gino Griego			
		Jun27/22	May1/23 +	0ct20/23 +	.0	Jun27/22	May1/23 +	0ct20/23		
		13 - Abnormal 12 -			2.					
		316 Base 115 73			8.1 Base Number (mg KOH/g)					
		17			10. (B/HOX 8.					
		19 18 Abnormal			12.	Base				
		특 문 Viscosity @ 100°(00	De	Base Number				
		Jun 27/22 0	May1/23	0ct20/23	Dec1/23					
		2-								
		۹. 4.								
		6								
		10 copper								
		ਬ੍ਰਿ Non-ferrous Meta		Octů	Dec					
		Jun 27/22	May1/23	0ct20/23	Dec1/23					
		4								
		E 8	-							
May1/23	0ct20/23	12 - nickel								
	m	Ferrous Alloys								
		GRAPHS								
		FLUID PROPE Visc @ 100°C	cSt	method ASTM D445	limit/base	current 14.4	history1 15.1	history2 15.0		
		Free Water	scalar	*Visual	1. 1. 1	NEG	NEG	NEG		
		Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG		
May1/23	0ct20/23 Dec1/23	Appearance Odor	scalar scalar	*Visual *Visual	NORML NORML	NORML NORML	NORML NORML	NORML NORML		
2	53 53	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE		
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE		
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE		
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE		
		White Metal Yellow Metal	scalar scalar	*Visual *Visual	NONE NONE	NONE	NONE	NONE		

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)