

## **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 944033

Component Natural Gas Engine

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

### 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.

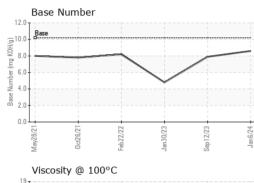
## Fluid Condition

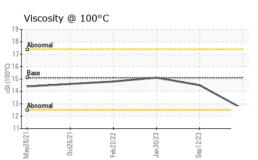
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	ΜΑΤΙΟΝ	method	limit/base	current	history1	history2
			innibacco	GFL0106975		GFL0066757
Sample Number		Client Info			GFL0089739	
Sample Date	bro	Client Info		06 Jan 2024	12 Sep 2023	30 Jan 2023
Machine Age	hrs	Client Info		21368	20950	20131
Oil Age	hrs	Client Info		418 N/A	819 Changed	907 Observed
Oil Changed		Client Info		N/A NORMAL	Changed	Changed
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	19	4	12
Chromium	ppm	ASTM D5185m	>4	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	<1	3	4
Lead	ppm	ASTM D5185m	>30	<1	<1	2
Copper	ppm	ASTM D5185m	>35	0	<1	3
Tin	ppm	ASTM D5185m	>4	<1	<1	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method			history1	history2
ADDITIVES Boron	maa		limit/base		history1 27	history2 9
Boron	ppm maa	ASTM D5185m	50	3	27	9
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	3 0	27 0	9 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	3 0 56	27 0 51	9 <1 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	3 0 56 <1	27 0 51 <1	9 <1 60 <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	3 0 56 <1 864	27 0 51 <1 601	9 <1 60 <1 538
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	3 0 56 <1 864 1036	27 0 51 <1 601 1638	9 <1 60 <1 538 1529
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	3 0 56 <1 864 1036 1055	27 0 51 <1 601 1638 797	9 <1 60 <1 538 1529 696
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	3 0 56 <1 864 1036	27 0 51 <1 601 1638	9 <1 60 <1 538 1529
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	3 0 56 <1 864 1036 1055 1243	27 0 51 <1 601 1638 797 999	9 <1 60 <1 538 1529 696 953
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 5 50 0 560 1510 780 870 2040 <b>limit/base</b>	3 0 56 <1 864 1036 1055 1243 2974	27 0 51 <1 601 1638 797 999 2999 history1	9 <1 60 <1 538 1529 696 953 2320
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 <b>method</b>	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b>	3 0 56 <1 864 1036 1055 1243 2974 current 3	27 0 51 <1 601 1638 797 999 2999 2999 history1 3	9 <1 60 <1 538 1529 696 953 2320 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 <b>method</b> ASTM D5185m	50 5 50 0 560 1510 780 870 2040 2040 2040 2040	3 0 56 <1 864 1036 1055 1243 2974 current 3 16	27 0 51 <1 601 1638 797 999 2999 2999 history1 3 5	9 <1 60 <1 538 1529 696 953 2320 history2 5 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>limit/base</b> >+100	3 0 56 <1 864 1036 1055 1243 2974 current 3 16 8	27 0 51 <1 601 1638 797 999 2999 history1 3 5 2	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 2040 2040 2040	3 0 56 <1 864 1036 1055 1243 2974 current 3 16 8	27 0 51 <1 601 1638 797 999 2999 2999 history1 3 5 2 2	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 5 5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>Imit/base</b> >+100 >20 <b>Imit/base</b>	3 0 56 <1 864 1036 1055 1243 2974 current 3 16 8 current 1.5	27 0 51 <1 601 1638 797 999 2999 history1 3 5 2 2 history1 0.1	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>Iimit/base</b> >+100 20 <b>Iimit/base</b>	3 0 56 <1 864 1036 1055 1243 2974 <i>current</i> 3 16 8 <i>current</i> 1.5 10.0	27 0 51 <1 601 1638 797 999 2999 history1 3 5 2 2 history1 0.1 8.6	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 5 history2 0.1 11.1
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 ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>Imit/base</b> >+100 >20 <b>Imit/base</b>	3 0 56 <1 864 1036 1055 1243 2974 current 3 16 8 current 1.5	27 0 51 <1 601 1638 797 999 2999 history1 3 5 2 2 history1 0.1	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 5 5 4 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 ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>Iimit/base</b> >+100 20 <b>Iimit/base</b>	3 0 56 <1 864 1036 1055 1243 2974 <i>current</i> 3 16 8 <i>current</i> 1.5 10.0	27 0 51 <1 601 1638 797 999 2999 history1 3 5 2 2 history1 0.1 8.6	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 5 history2 0.1 11.1
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 ppm ppm	ASTM D5185m ASTM D5185m	50 50 50 150 780 870 2040 <b>imit/base</b> >+100 20 <b>imit/base</b> >20 <b>imit/base</b>	3 0 56 <1 864 1036 1055 1243 2974 <u>current</u> 3 16 8 <u>current</u> 1.5 10.0 20.7	27 0 51 <1 601 1638 797 999 2999 2999 history1 3 5 2 2 history1 0.1 8.6 17.6	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 5 history2 0.1 11.1 22.5
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 D7844	50 50 560 1510 780 870 2040 >+100 >+100 >20 imit/base >20 >20 >30 imit/base	3 0 56 <1 864 1036 1055 1243 2974 <i>current</i> 3 16 8 <i>current</i> 1.5 10.0 20.7	27 0 51 <1 601 1638 797 999 2999 history1 3 5 2 2 history1 0.1 8.6 17.6 history1	9 <1 60 <1 538 1529 696 953 2320 history2 5 4 5 4 5 5 history2 0.1 11.1 22.5 history2



# **OIL ANALYSIS REPORT**





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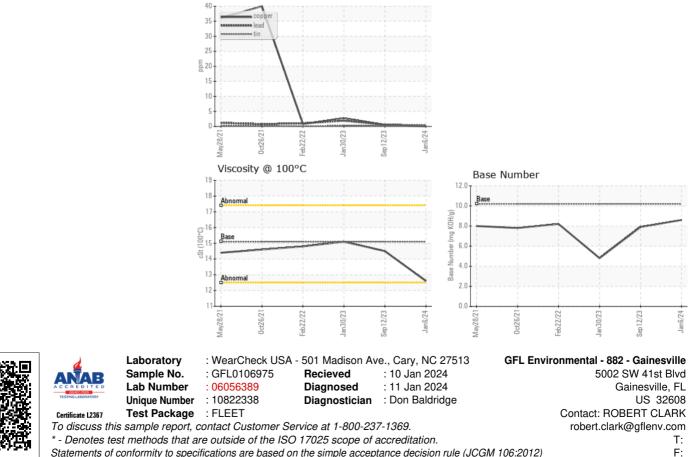
0ct26/21

Non-ferrous Metals

Feb22/22

Jan 30/23

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	RTIES	method	limit/base	current	history1	history2
	<u>.</u>	ASTM D445	15.1	12.6	14.5	15.1
Visc @ 100°C	cSt	ASTIVI D445	10.1	-		
Visc @ 100°C GRAPHS	cSt	A31101 D443	10.1	-		
GRAPHS Ferrous Alloys	cSt	A3110 D443	10.1	-		
GRAPHS Ferrous Alloys	cSt	A31WI D4443		-		
Ferrous Alloys	cSt	A31WI D443	/	-		
GRAPHS Ferrous Alloys	cSt	A31W D4+3				
GRAPHS Ferrous Alloys	cSt	A31W D4+3				
GRAPHS Ferrous Alloys	cSt					
GRAPHS Ferrous Alloys	cSt					



Sep 12/23 ;

Jan6/24 -

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Submitted By: STEPHEN WEIL