

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend

## NORMAL



Component 2 Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (10 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.



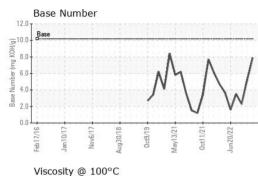


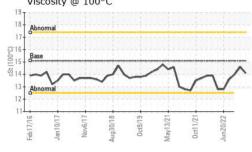
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SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0101766	PCA0095855	PCA0077340
Sample Date		Client Info		09 Jan 2024	13 Nov 2023	19 Apr 2023
Machine Age	hrs	Client Info		22034	21938	20833
Oil Age	hrs	Client Info		96	1105	1132
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
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	3	9	8
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	2	3	2
Lead	ppm	ASTM D5185m	>30	1	2	12
Copper	ppm	ASTM D5185m	>35	<1	<1	0
Tin	ppm	ASTM D5185m	>4	<1	0	0
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 50	current 30	history1 13	history2 6
	ppm ppm					
Boron		ASTM D5185m	50	30	13	6
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	30 0	13 6	6 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	30 0 47	13 6 48	6 0 39
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	30 0 47 <1	13 6 48 <1	6 0 39 <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	30 0 47 <1 604	13 6 48 <1 494	6 0 39 <1 420
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	30 0 47 <1 604 1388	13 6 48 <1 494 1418	6 0 39 <1 420 1257 546 731
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	30 0 47 <1 604 1388 807	13 6 48 <1 494 1418 730	6 0 39 <1 420 1257 546
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	30 0 47 <1 604 1388 807 987	13 6 48 <1 494 1418 730 885	6 0 39 <1 420 1257 546 731
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 5 50 0 560 1510 780 870 2040	30 0 47 <1 604 1388 807 987 2565	13 6 48 <1 494 1418 730 885 2745	6 0 39 <1 420 1257 546 731 2315
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	50 5 50 0 560 1510 780 870 2040 limit/base	30 0 47 <1 604 1388 807 987 2565 current	13 6 48 <1 494 1418 730 885 2745 history1	6 0 39 <1 420 1257 546 731 2315 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 <b>method</b>	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	30 0 47 <1 604 1388 807 987 2565 current 3	13 6 48 <1 494 1418 730 885 2745 history1 11	6 0 39 <1 420 1257 546 731 2315 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	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	30 0 47 <1 604 1388 807 987 2565 <u>current</u> 3 3	13 6 48 <1 494 1418 730 885 2745 <b>history1</b> 11 2	6 0 39 <1 420 1257 546 731 2315 <b>history2</b> 5 9
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 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	30 0 47 <1 604 1388 807 987 2565 current 3 3 0	13 6 48 <1 494 1418 730 885 2745 history1 11 2 2	6 0 39 <1 420 1257 546 731 2315 history2 5 9 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	30 0 47 <1 604 1388 807 987 2565 current 3 3 0 0	13 6 48 <1 494 1418 730 885 2745 history1 11 2 2 2 history1	6 0 39 <1 420 1257 546 731 2315 <b>history2</b> 5 9 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100 	30 0 47 <1 604 1388 807 987 2565 <b>current</b> 3 3 0 <b>current</b> 0.1	13 6 48 <1 494 1418 730 885 2745 history1 11 2 2 2 history1 0	6 0 39 <1 420 1257 546 731 2315 history2 5 9 0 0 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 5 50 0 560 1510 780 870 2040 <b>limit/base</b> >20 <b>limit/base</b>	30 0 47 <1 604 1388 807 987 2565 <i>current</i> 3 3 3 0 <i>current</i> 0.1 7.3	13 6 48 <1 494 1418 730 885 2745 history1 11 2 2 2 history1 0 10.1	6 0 39 <1 420 1257 546 731 2315 history2 5 9 0 0 history2 0 11.0
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> >2040 <b>imit/base</b> >20	30 0 47 <1 604 1388 807 987 2565 <b>current</b> 3 3 0 <b>current</b> 0.1 7.3 19.2	13 6 48 <1 494 1418 730 885 2745 history1 11 2 2 2 history1 0 10.1 23.0	6 0 39 <1 420 1257 546 731 2315 <b>history2</b> 5 9 0 <b>history2</b> 0 <b>history2</b> 0 11.0 26.2

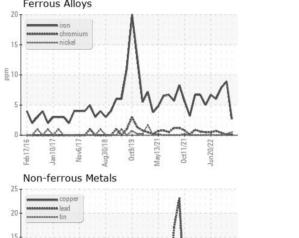


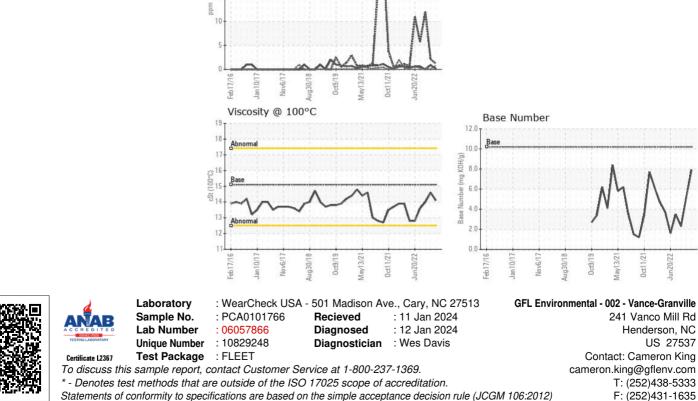
# **OIL ANALYSIS REPORT**





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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	14.1	14.6	14.0
GRAPHS						
Ferrous Alloys						





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