

## **OIL ANALYSIS REPORT**

Sample Rating Trend

### NORMAL

## (YA139880) 3705 Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (10 GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Area

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.

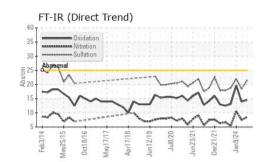
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0124232	PCA0101759	PCA0101780
Sample Date		Client Info		12 Jul 2024	28 Feb 2024	09 Jan 2024
Machine Age	hrs	Client Info		17917	17346	17017
Oil Age	hrs	Client Info		571	329	649
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>165	19	12	27
Chromium	ppm	ASTM D5185m	>5	2	2	4
Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	3	4	0 10
Lead	ppm	ASTM D5185m	>150	1	1	5
Copper	ppm	ASTM D5185m	>90	4	13	55
Tin	ppm	ASTM D5185m	>5	<1	<1	2
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 13	history1 17	history2 25
	ppm ppm					
Boron		ASTM D5185m	0	13	17	25
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	13 <1	17 0	25 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	13 <1 59	17 0 62	25 0 53
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	13 <1 59 0	17 0 62 <1	25 0 53 2
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	13 <1 59 0 685	17 0 62 <1 700 1306 953	25 0 53 2 788 1240 789
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	13 <1 59 0 685 1487	17 0 62 <1 700 1306	25 0 53 2 788 1240 789 1014
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	0 0 60 0 1010 1070 1150	13 <1 59 0 685 1487 918	17 0 62 <1 700 1306 953	25 0 53 2 788 1240 789
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	0 0 60 0 1010 1070 1150 1270	13 <1 59 0 685 1487 918 1186	17 0 62 <1 700 1306 953 1182	25 0 53 2 788 1240 789 1014
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	13 <1 59 0 685 1487 918 1186 2902	17 0 62 <1 700 1306 953 1182 3345	25 0 53 2 788 1240 789 1014 2352
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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	0 0 60 1010 1070 1150 1270 2060	13 <1 59 0 685 1487 918 1186 2902 current	17 0 62 <1 700 1306 953 1182 3345 history1	25 0 53 2 788 1240 789 1014 2352 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> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	13 <1 59 0 685 1487 918 1186 2902 current 12	17 0 62 <1 700 1306 953 1182 3345 history1 18	25 0 53 2 788 1240 789 1014 2352 history2 ▲ 55
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	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >35	13 <1 59 0 685 1487 918 1186 2902 current 12 <1	17 0 62 <1 700 1306 953 1182 3345 history1 18 4	25 0 53 2 788 1240 789 1014 2352 history2 ▲ 55 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >35	13 <1 59 0 685 1487 918 1186 2902 current 12 <1 2	17 0 62 <1 700 1306 953 1182 3345 history1 18 4 1 1 8 4 1 1 bistory1 0.4	25 0 53 2 788 1240 789 1014 2352 history2 ▲ 55 3 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 235 >35 >20	13 <1 59 0 685 1487 918 1186 2902 current 12 <1 2 2 current	17 0 62 <1 700 1306 953 1182 3345 history1 18 4 1 1 <i>history</i> 1	25 0 53 2 788 1240 789 1014 2352 <b>history2</b> \$55 3 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 ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >35 >20 limit/base	13 <1 59 0 685 1487 918 1186 2902 current 12 <1 2 current 12 12	17 0 62 <1 700 1306 953 1182 3345 history1 18 4 1 1 8 4 1 1 bistory1 0.4	25 0 53 2 788 1240 789 1014 2352 history2 55 3 0 0 history2 0.6
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	0 0 0 1010 1070 1150 1270 2060 imit/base >35 >20 imit/base >7.5 >20	13 <1 59 0 685 1487 918 1186 2902 <i>current</i> 12 <1 2 <i>current</i> 1.1 8.5	17 0 62 <1 700 1306 953 1182 3345 history1 18 4 1 1 8 4 1 1 0.4 7.5	25 0 53 2 788 1240 789 1014 2352 history2 ▲ 55 3 0 0 history2 0.6 10.6
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	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >35 >20 <b>imit/base</b> >7.5 >20 >30	13 <1 59 0 685 1487 918 1186 2902 <u>current</u> 12 <1 2 <u>current</u> 1.1 8.5 21.3	17 0 62 <1 700 1306 953 1182 3345 history1 18 4 1 1 history1 0.4 7.5 18.4	25 0 53 2 788 1240 789 1014 2352 <b>bistory2</b> 55 3 0 0 <b>bistory2</b> 0.6 10.6 22.0
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7615	0 0 0 1010 1070 1150 1270 2060 <b>Iimit/base</b> >35 20 <b>Iimit/base</b> >7.5 >20 >30	13 <1 59 0 685 1487 918 1186 2902 current 12 <1 2 current 1.1 8.5 21.3 current	17 0 62 <1 700 1306 953 1182 3345 history1 18 4 1 1 history1 0.4 7.5 18.4 history1	25 0 53 2 788 1240 789 1014 2352 history2 ▲ 55 3 0 0 history2 0.6 10.6 22.0

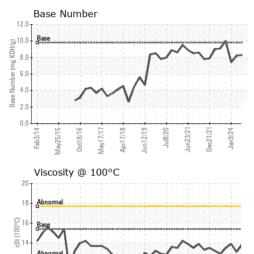


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# **OIL ANALYSIS REPORT**





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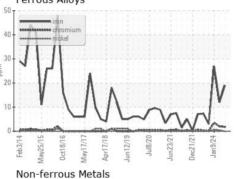
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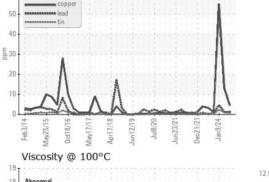
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	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	15.4	13.8	13.1	13.9
GRAPHS						

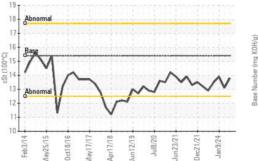
Ferrous Alloys

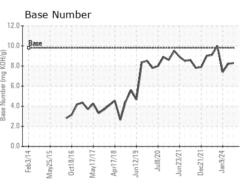
Jan 9/24

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Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 002 - Vance-Granville Sample No. : PCA0124232 Received : 15 Jul 2024 241 Vanco Mill Rd Lab Number : 06235542 Tested : 15 Jul 2024 Henderson, NC Unique Number : 11124376 Diagnosed : 15 Jul 2024 - Wes Davis US 27537 Contact: Cameron King Test Package : FLEET Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. cameron.king@gflenv.com T: (252)438-5333 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. 

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

Submitted By: Cameron King

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