

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

Machine Id 3689C

Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40 (38 QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

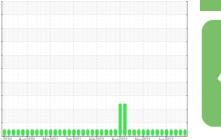
All component wear rates are normal.

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.

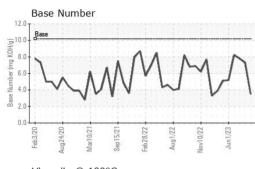


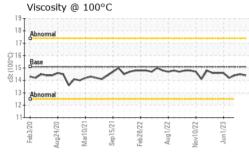


Sample Date Client Info 10 Jan 2024 14 Sep 2023 01 Sep 2023 Machine Age hrs Client Info 19672 13715 13539 Oil Age brs Client Info 808 1200 600 Oil Changed Client Info Not Changd Not Changd Not Changd Nor Changd CONTAMINATION method imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >50 22 12 15 Chromium ppm ASTM D5185m >50 21 <1 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 1 <1 <1 Silver ppm ASTM D5185m >30 1 <1 0	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
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Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 4 2 1 Nickel ppm ASTM D5185m >2 <1	Oil Age	hrs	Client Info		808	1200	600
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Water WC Method >0.1 NEG NEG NEG Water ppm ASTM D5185m >50 22 12 15 Chromium ppm ASTM D5185m >4 4 2 1 Nickel ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 Lead ppm ASTM D5185m >3 0 0 <1 1 Cadmium ppm ASTM D5185m >3 1 <1 <1 <1 Cadmium ppm ASTM D5185m >3 0 0 <1 0 Copper ppm ASTM D5185m 0 <1 0 <1 0 ADDITVES method Imit/base current <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Not Changd</th> <th>Changed</th> <th>Not Changd</th>	Oil Changed		Client Info		Not Changd	Changed	Not Changd
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Nickel ppm ASTM D5185m >2 <1	Iron	ppm	ASTM D5185m	>50	22	12	15
Titanium ppm ASTM D5185m <1	Chromium	ppm	ASTM D5185m	>4	4	2	1
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 9 2 3 Lead ppm ASTM D5185m >30 <1 <1 0 Copper ppm ASTM D5185m >35 1 <1 <1 1 Tin ppm ASTM D5185m >35 1 <1 <1 1 Cadmium ppm ASTM D5185m >4 <1 2 <1 Cadmium ppm ASTM D5185m 0 <1 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 4 25 41 Molybdenum ppm ASTM D5185m 50 51 48 55 Magnesium ppm ASTM D5185m 560 502 514 592 Calcium ppm ASTM D5185m	Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
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Lead ppm ASTM D5185m >30 <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >35 1 <1	Aluminum	ppm	ASTM D5185m	>9	9	2	3
Tin ppm ASTM D5185m >4 <1	Lead	ppm	ASTM D5185m	>30	<1	<1	0
Vanadium ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>35	1	<1	<1
Cadmium ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>4	<1	2	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 4 25 41 Barium ppm ASTM D5185m 50 0 444 0 Molybdenum ppm ASTM D5185m 50 51 48 55 Manganese ppm ASTM D5185m 0 <1 3 3 Magnesium ppm ASTM D5185m 560 502 514 592 Calcium ppm ASTM D5185m 780 694 688 798 Zinc ppm ASTM D5185m 780 694 688 798 Sulfur ppm ASTM D5185m 2040 2418 2501 2972 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 12 16 Sodium ppm ASTM D5185m >20	Vanadium	ppm	ASTM D5185m		0	0	<1
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Barium ppm ASTM D5185m 5 0 444 0 Molybdenum ppm ASTM D5185m 50 51 48 55 Manganese ppm ASTM D5185m 0 <1 3 3 Magnesium ppm ASTM D5185m 560 502 514 592 Calcium ppm ASTM D5185m 560 502 514 592 Calcium ppm ASTM D5185m 1510 1460 1399 1674 Phosphorus ppm ASTM D5185m 780 694 688 798 Zinc ppm ASTM D5185m 780 883 862 956 Sulfur ppm ASTM D5185m 2040 2418 2501 2972 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 0 12 16 Sodium ppm ASTM D518							
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Calcium ppm ASTM D5185m 1510 1460 1399 1674 Phosphorus ppm ASTM D5185m 780 694 688 798 Zinc ppm ASTM D5185m 870 883 862 956 Sulfur ppm ASTM D5185m 2040 2418 2501 2972 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 12 16 Sodium ppm ASTM D5185m >+20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 1 Nitration Abs/.m *ASTM D7745 >30	Boron	ppm	ASTM D5185m ASTM D5185m	50 5	4 0	25 44	41 0 55
Phosphorus ppm ASTM D5185m 780 694 688 798 Zinc ppm ASTM D5185m 870 883 862 956 Sulfur ppm ASTM D5185m 2040 2418 2501 2972 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 12 16 Sodium ppm ASTM D5185m >+20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/.mm<*ASTM D745	Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	4 0 51	25 44 48	41 0 55
Zinc ppm ASTM D5185m 870 883 862 956 Sulfur ppm ASTM D5185m 2040 2418 2501 2972 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 12 16 Sodium ppm ASTM D5185m >+100 6 12 3 Potassium ppm ASTM D5185m >20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 7.9 7.3 Sulfation Abs/.tmm *ASTM D7415 >30 22.3 18.2 18.1	Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	4 0 51 <1	25 44 48 3	41 0 55 3
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Silicon ppm ASTM D5185m >+100 6 12 16 Sodium ppm ASTM D5185m 4 2 3 Potassium ppm ASTM D5185m >20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 7.9 7.3 Sulfation Abs/.tmm *ASTM D7415 >30 22.3 18.2 18.1 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium Calcium	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	4 0 51 <1 502 1460 694	25 44 48 3 514 1399 688	41 0 55 3 592 1674 798
Sodium ppm ASTM D5185m 4 2 3 Potassium ppm ASTM D5185m >20 3 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 7.9 7.3 Sulfation Abs/.imm *ASTM D7415 >30 22.3 18.2 18.1 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 51 <1 502 1460 694 883	25 44 48 3 514 1399 688 862	41 0 55 3 592 1674 798 956
PotassiumppmASTM D5185m>20330INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844000.1NitrationAbs/cm*ASTM D7624>2010.97.97.3SulfationAbs/.imm*ASTM D7415>3022.318.218.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	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	4 0 51 <1 502 1460 694 883 2418	25 44 48 3 514 1399 688 862 2501	41 0 55 3 592 1674 798 956 2972
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844000.1NitrationAbs/cm*ASTM D7624>2010.97.97.3SulfationAbs/.1mm*ASTM D7415>3022.318.218.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	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 limit/base	4 0 51 <1 502 1460 694 883 2418 current	25 44 48 3 514 1399 688 862 2501 history1	41 0 55 3 592 1674 798 956 2972 history2
Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 7.9 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 18.2 18.1 FLUID DEGRADATION method limit/base current history1 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 method	50 5 50 0 560 1510 780 870 2040 limit/base	4 0 51 <1 502 1460 694 883 2418 current 6	25 44 48 3 514 1399 688 862 2501 history1 12	41 0 55 3 592 1674 798 956 2972 history2 16
Nitration Abs/cm *ASTM D7624 >20 10.9 7.9 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 18.2 18.1 FLUID DEGRADATION method limit/base current history1 history2	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 method ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	4 0 51 <1 502 1460 694 883 2418 current 6 4	25 44 48 3 514 1399 688 862 2501 history1 12 2	41 0 55 3 592 1674 798 956 2972 history2 16 3
Sulfation Abs/.1mm *ASTM D7415 >30 22.3 18.2 18.1 FLUID DEGRADATION method limit/base current history1 history2	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 limit/base >+100	4 0 51 <1 502 1460 694 883 2418 current 6 4 3	25 44 48 3 514 1399 688 862 2501 history1 12 2 3	41 0 55 3 592 1674 798 956 2972 history2 16 3 0
FLUID DEGRADATION method limit/base current history1 history2	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 5 50 0 560 1510 780 870 2040 limit/base >+100	4 0 51 <1 502 1460 694 883 2418 current 6 4 3 Current	25 44 48 3 514 1399 688 862 2501 history1 12 2 3 3 history1	41 0 55 3 592 1674 798 956 2972 history2 16 3 0 bistory2
	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 limit/base >+100 	4 0 51 <1 502 1460 694 883 2418 <i>current</i> 6 4 3 <i>current</i> 0	25 44 48 3 514 1399 688 862 2501 history1 12 2 3 history1 0	41 0 55 3 592 1674 798 956 2972 history2 16 3 0 history2 0.1
Oxidation Abs/1mm *ASTM D7414 >25 18 2 15 1 15 3	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 ppm	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 imit/base >+100 imit/base	4 0 51 <1 502 1460 694 883 2418 <i>current</i> 6 4 3 <i>current</i> 0 10.9	25 44 48 3 514 1399 688 862 2501 history1 12 2 3 history1 0 7.9	41 0 55 3 592 1674 798 956 2972 history2 16 3 0 history2 0.1 7.3
	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 imit/base >2040 imit/base >20	4 0 51 <1 502 1460 694 883 2418 current 6 4 3 current 0 10.9 22.3	25 44 48 3 514 1399 688 862 2501 history1 12 2 3 3 history1 0 7.9 18.2	41 0 55 3 592 1674 798 956 2972 history2 16 3 0 history2 0.1 7.3 18.1
Base Number (BN) mg KOH/g ASTM D2896 10.2 3.5 7.3 7.8	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 limit/base >2040 limit/base >20 limit/base	4 0 51 <1 502 1460 694 883 2418 current 6 4 3 current 0 10.9 22.3	25 44 48 3 514 1399 688 862 2501 history1 12 2 3 3 history1 0 7.9 18.2	41 0 55 3 592 1674 798 956 2972 history2 16 3 0 history2 0.1 7.3 18.1

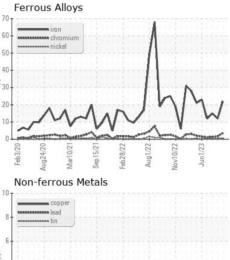


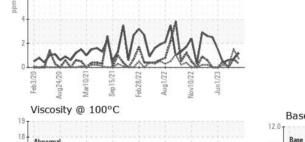
OIL ANALYSIS REPORT





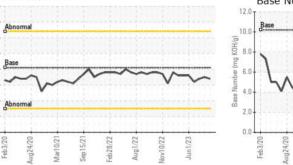
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	14.4	14.5	14.4
GRAPHS						





Recieved

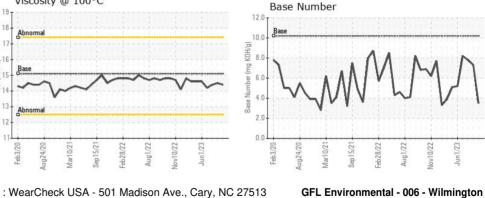
Diagnosed



: 11 Jan 2024

: 14 Jan 2024

Diagnostician : Don Baldridge



3618 US Highway 421 N Wilmington, NC US 28401 Contact: Eric Wood eric.wood@gflenv.com T: (717)723-1956 F: (910)762-6880



Test Package : FLEET Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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)

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Laboratory

Sample No.

Lab Number

Unique Number

Page 2 of 2