

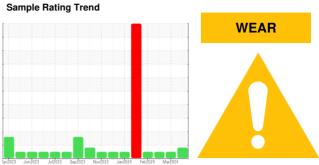
OIL ANALYSIS REPORT





Machine Id
732027
Component
Natural Gas Engine
Fluid

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



DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

Cylinder, crank, or cam shaft wear is indicated.

Contamination

There is no indication of any contamination in the oil.

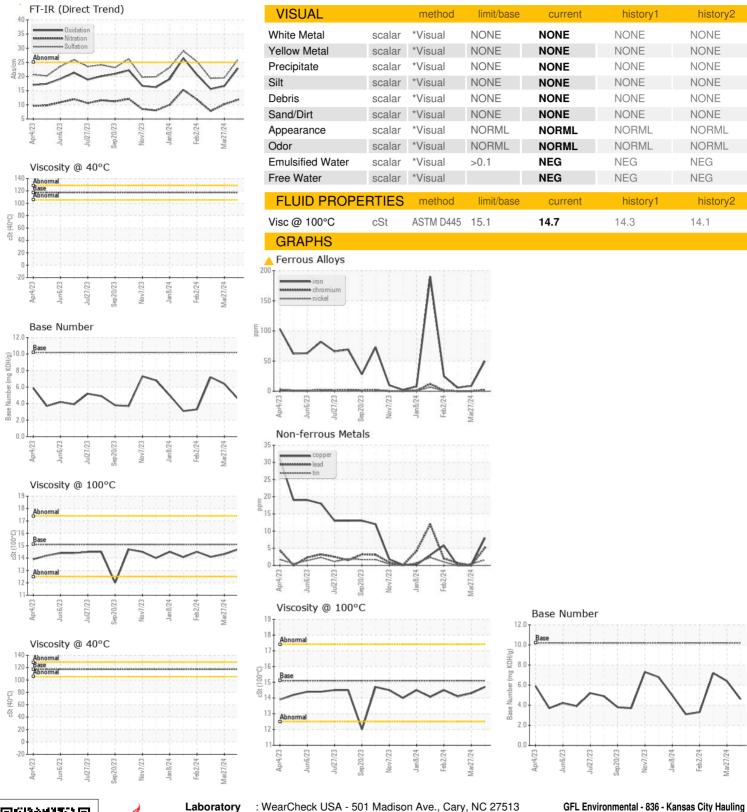
Fluid Condition

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 28 Jun 2024 27 Mar 2024 29 Feb 2024 Machine Age hrs Client Info 2441 2158 2024 Oil Age hrs Client Info Not Changd NorMAL NORMAL CONTAMINATION method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 \$50 9 6 Chromium ppm ASTM D5185m >5 2 <1 0 Nickel ppm ASTM D5185m >5 2 <1 0 Silver ppm ASTM D5185m >3 <1 0 0 Silver ppm ASTM D5185m >25 6 2 1 Lead ppm ASTM D5185m >40 <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>							
Sample Date Client Info 28 Jun 2024 27 Mar 2024 29 Feb 2024 Machine Age hrs Client Info 2441 2158 2024 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info Not Changd	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 28 Jun 2024 27 Mar 2024 29 Feb 2024	Sample Number		Client Info		GFL0124071	GFL0114083	GFL0109803
Oil Age			Client Info		28 Jun 2024	27 Mar 2024	29 Feb 2024
Dil Changed Client Info	Machine Age	hrs	Client Info		2441	2158	2024
ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 \$50 9 6 Chromium ppm ASTM D5185m >5 2 <1	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 ▲ 50 9 6 Chromium ppm ASTM D5185m >50 2 <1	-				ABNORMAL	NORMAL	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 4 50 9 6 Chromium ppm ASTM D5185m >5 2 <1	CONTAMINATION	ON	method	limit/base	current	history1	history2
Description	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium	WEAR METALS	3	method	limit/base	current	history1	history2
ASTM D5185m S-4 C1 C1 C1	ron	ppm	ASTM D5185m	>50	_ 50	9	6
Description	Chromium	ppm	ASTM D5185m	>5	2	<1	0
Saliver	Nickel		ASTM D5185m	>4	<1	<1	<1
Silver	Titanium	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>5		0	0
Aluminum	Silver						
Lead		• •					
Description							<1
Tin	Copper	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>150	8	0	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 13 17 29 Barium ppm ASTM D5185m 50 0 0 0 Molybdenum ppm ASTM D5185m 50 60 50 51 Manganese ppm ASTM D5185m 50 60 50 51 Magnesium ppm ASTM D5185m 560 754 575 627 Calcium ppm ASTM D5185m 1510 1732 1657 1763 Phosphorus ppm ASTM D5185m 780 874 816 904 Zinc ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1				>4		<1	
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Soron ppm ASTM D5185m 50 13 17 29							
Barium							
Molybdenum ppm ASTM D5185m 50 60 50 51 Manganese ppm ASTM D5185m 0 8 <1 <1 Magnesium ppm ASTM D5185m 560 754 575 627 Calcium ppm ASTM D5185m 560 754 575 627 Phosphorus ppm ASTM D5185m 780 874 816 904 Zinc ppm ASTM D5185m 870 1102 1009 1076 Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 </td <td>ADDITIVES</td> <td></td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	ADDITIVES		method	limit/base	current	history1	history2
Manganese ppm ASTM D5185m 0 8 <1 <1 Magnesium ppm ASTM D5185m 560 754 575 627 Calcium ppm ASTM D5185m 1510 1732 1657 1763 Phosphorus ppm ASTM D5185m 780 874 816 904 Zinc ppm ASTM D5185m 870 1102 1009 1076 Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0		ppm					
Magnesium ppm ASTM D5185m 560 754 575 627 Calcium ppm ASTM D5185m 1510 1732 1657 1763 Phosphorus ppm ASTM D5185m 780 874 816 904 Zinc ppm ASTM D5185m 870 1102 1009 1076 Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/cm *ASTM D7415 >30	Boron		ASTM D5185m	50	13	17	29
Calcium ppm ASTM D5185m 1510 1732 1657 1763 Phosphorus ppm ASTM D5185m 780 874 816 904 Zinc ppm ASTM D5185m 870 1102 1009 1076 Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Soot % % *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0	Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	13 0	17	29 0
Phosphorus ppm ASTM D5185m 780 874 816 904 Zinc ppm ASTM D5185m 870 1102 1009 1076 Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION limit/base current history1 <td>Boron Barium Molybdenum</td> <td>ppm</td> <td>ASTM D5185m ASTM D5185m ASTM D5185m</td> <td>50 5 50</td> <th>13 0 60</th> <td>17 0 50</td> <td>29 0 51</td>	Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	13 0 60	17 0 50	29 0 51
Zinc ppm ASTM D5185m 870 1102 1009 1076 Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	13 0 60 8	17 0 50 <1	29 0 51 <1
Sulfur ppm ASTM D5185m 2040 2909 2866 2896 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	13 0 60 8 754	17 0 50 <1 575	29 0 51 <1 627
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510	13 0 60 8 754 1732	17 0 50 <1 575 1657	29 0 51 <1 627 1763
Silicon ppm ASTM D5185m >25 15 4 4 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	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 ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	13 0 60 8 754 1732 874	17 0 50 <1 575 1657 816	29 0 51 <1 627 1763 904
Sodium ppm ASTM D5185m 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	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 ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870	13 0 60 8 754 1732 874 1102	17 0 50 <1 575 1657 816 1009	29 0 51 <1 627 1763 904 1076
Sodium ppm ASTM D5185m 5 4 Potassium ppm ASTM D5185m >20 3 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 ASTM D5185m	50 5 50 0 560 1510 780 870 2040	13 0 60 8 754 1732 874 1102 2909	17 0 50 <1 575 1657 816 1009 2866	29 0 51 <1 627 1763 904 1076 2896
INFRA-RED	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 ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base	13 0 60 8 754 1732 874 1102 2909	17 0 50 <1 575 1657 816 1009 2866 history1	29 0 51 <1 627 1763 904 1076 2896 history2
Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.8 10.2 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base	13 0 60 8 754 1732 874 1102 2909 current	17 0 50 <1 575 1657 816 1009 2866 history1	29 0 51 <1 627 1763 904 1076 2896 history2
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Sulfation Abs/.1mm *ASTM D7415 >30 26.0 19.5 19.3 FLUID DEGRADATION method limit/base current history1 history2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >25 >20	13 0 60 8 754 1732 874 1102 2909 current 15 5 3	17 0 50 <1 575 1657 816 1009 2866 history1 4 5	29 0 51 <1 627 1763 904 1076 2896 history2 4 0
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >25 >20 limit/base	13 0 60 8 754 1732 874 1102 2909 current 15 5 3 current 0	17 0 50 <1 575 1657 816 1009 2866 history1 4 5 1 history1 0	29 0 51 <1 627 1763 904 1076 2896 history2 4 0 history2
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Oxidation ADS/.Imm A51M D/414 >25 22.9 16.6 15.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	50 5 50 0 560 1510 780 870 2040 limit/base >25 >20 limit/base	13 0 60 8 754 1732 874 1102 2909 current 15 5 3 current 0 11.8 26.0	17 0 50 <1 575 1657 816 1009 2866 history1 4 5 1 history1 0 10.2 19.5	29 0 51 <1 627 1763 904 1076 2896 history2 4 0 history2 0 7.8 19.3
Base Number (BN) mg KOH/g ASTM D2896 10.2 4.6 6.4 7.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	50 5 50 0 560 1510 780 870 2040 limit/base >25 >20 limit/base	13 0 60 8 754 1732 874 1102 2909 current 15 5 3 current 0 11.8 26.0	17 0 50 <1 575 1657 816 1009 2866 history1 4 5 1 history1 0 10.2 19.5	29 0 51 <1 627 1763 904 1076 2896 history2 4 0 history2 0 7.8 19.3



OIL ANALYSIS REPORT







Certificate 12367

Sample No.

: GFL0124071 Lab Number : 06225936 Unique Number : 11109429

Test Package : FLEET (Additional Tests: KV40)

Received : 02 Jul 2024 **Tested** : 05 Jul 2024

Diagnosed : 05 Jul 2024 - Jonathan Hester

US 64126 Contact: Loyce Stewart loyce.stewart@gflenv.com

7801 East Truman Road

Kansas City, MO

To discuss this sample report, contact Customer Service at 1-800-237-1369. st - 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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