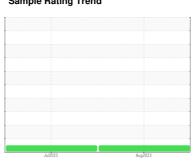


OIL ANALYSIS REPORT

Sample Rating Trend







733020

Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40

DIAGNOSIS

Recommendation

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

Metal levels are typical for a new component breaking in.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components.

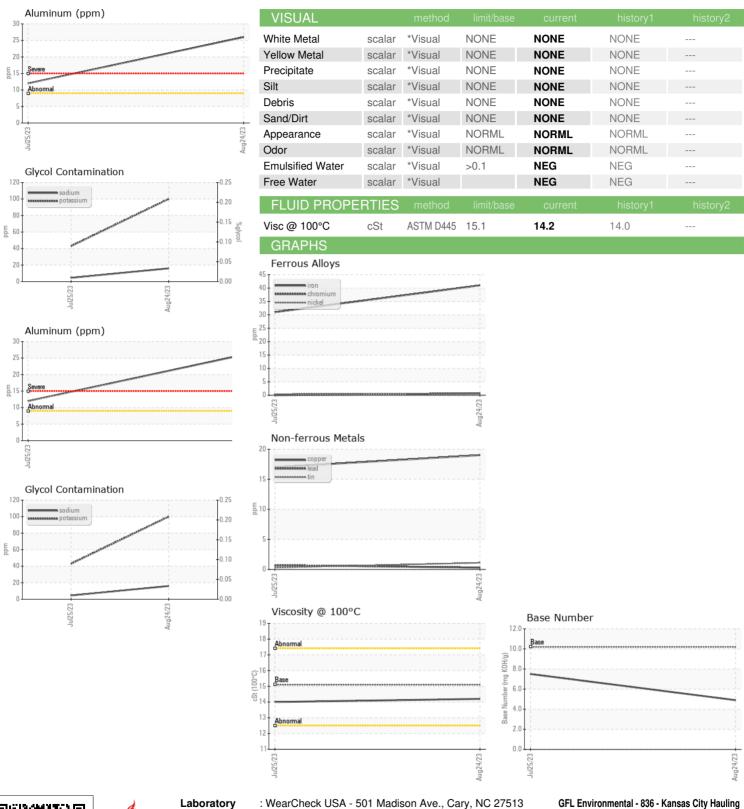
Fluid Condition

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

Sample Number Client Info QFL0090686 GFL0087226							
SAMPLE INFORMATION method limit/base current history1 history1 Sample Number Client Info SFL0090686 GFL0087226 Machine Age hrs Client Info 24 Aug 2023 25 Jul 2023 Oil Age hrs Client Info O O Oil Age hrs Client Info O O Oil Changed Client Info Not Changd Not Changd Not Changd Not Changd NormAlL NORMAL NORMAL	QTS)			Jul2023	Aug2023		
Sample Date Client Info 24 Aug 2023 25 Jul 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 24 Aug 2023 25 Jul 2023 Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info Not Changd Not Changd NORMAL Sample Status NORMAL NORMAL WEAR METALS method limit/base current history1 history1 Iron ppm ASTM 05185m >50 41 31 Chromium ppm ASTM 05185m >50 41 31 Chromium ppm ASTM 05185m >4 -1 0 Nickel ppm ASTM 05185m >2 -1 <1 Titrainium ppm ASTM 05185m >3 -1 0 Aluminum ppm ASTM 05185m >9 26 12 Lead ppm ASTM 05185m >9 26 12 Capper ppm ASTM 05185m >30 -1 <1 Capper ppm ASTM 05185m >4 1 <1 Vanadium ppm ASTM 05185m 0 0 <1 Tin ppm ASTM 05185m 0 0 <1 ADDITIVES method limit/base current history1 history1 ASTM 05185m 50 20 26 Barium ppm ASTM 05185m 50 20 26 Barium ppm ASTM 05185m 50 53 46 Magnaese ppm ASTM 05185m 50 53 46 Manganese ppm ASTM 05185m 50 53 46 Manganese ppm ASTM 05185m 50 12 11 Manganese ppm ASTM 05185m 50 32 46 Phosphorus ppm ASTM 05185m 50 33 28 Phosphorus ppm ASTM 05185m 780 729 678 Zinc ppm ASTM 05185m 780 729 678 Sulfur ppm ASTM 05185m 780 729 678 CONTAMINANTS method limit/base current history1 history1 INFRA-RED method limit/base current history1 history1 INFRA-RED method limit/base current history1 history2 INFRA-RED method limit/base current history1 history2 history3 history3 history3 history3 history4 hi					GFL0090686	GFL0087226	
Machine Age hrs Client Info 0 0 0 0 0 0 0 0 0			Client Info		24 Aug 2023	25 Jul 2023	
Dil Age	•	hrs	Client Info		•	152	
Coli Changed Client Info Not Changed NORMAL NOR		hrs	Client Info		0	0	
NORMAL N			Client Info		Not Changd	Not Changd	
Chromium	Sample Status				NORMAL		
Chromium ppm ASTM D5185m >4	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	41	31	
Titanium	Chromium	ppm	ASTM D5185m	>4	<1	0	
Silver	Nickel	ppm	ASTM D5185m	>2	<1	<1	
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	
Lead	Silver	ppm	ASTM D5185m	>3	<1	0	
Copper ppm ASTM D5185m 335 19 17 Tin ppm ASTM D5185m >4 1 <1	Aluminum	ppm	ASTM D5185m	>9	26	12	
Tin	Lead	ppm	ASTM D5185m	>30	<1	<1	
Tin	Copper	ppm	ASTM D5185m	>35	19	17	
Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 50 20 26 Barium ppm ASTM D5185m 5 <1 0 Molybdenum ppm ASTM D5185m 50 53 46 Manganese ppm ASTM D5185m 0 12 11 Magnesium ppm ASTM D5185m 560 824 733 Calcium ppm ASTM D5185m 1510 1129 1035 Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1	Tin		ASTM D5185m	>4	1	<1	
Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 50 20 26 Barium ppm ASTM D5185m 5 <1 0 Molybdenum ppm ASTM D5185m 50 53 46 Manganese ppm ASTM D5185m 0 12 11 Magnesium ppm ASTM D5185m 560 824 733 Calcium ppm ASTM D5185m 1510 1129 1035 Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history1 Solicon ppm ASTM D5185m >20 10	Vanadium		ASTM D5185m		0	<1	
Boron ppm ASTM D5185m 50 20 26	Cadmium		ASTM D5185m		0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 53 46 Manganese ppm ASTM D5185m 0 12 11 Magnesium ppm ASTM D5185m 560 824 733 Calcium ppm ASTM D5185m 560 824 733 Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 870 938 820 Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history Solicon ppm ASTM D5185m >+100 33 28 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % *ASTM D7844 0	Boron	ppm	ASTM D5185m	50	20	26	
Manganese ppm ASTM D5185m 0 12 11 Magnesium ppm ASTM D5185m 560 824 733 Calcium ppm ASTM D5185m 1510 1129 1035 Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 870 938 820 Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 33 28 Sodium ppm ASTM D5185m >20 100 43 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % *ASTM D7844 0	Barium	ppm	ASTM D5185m	5	<1	0	
Magnesium ppm ASTM D5185m 560 824 733 Calcium ppm ASTM D5185m 1510 1129 1035 Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 870 938 820 Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >+100 33 28 Sodium ppm ASTM D5185m >+100 33 28 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 0 0.1 Sulfation Abs/.1mm *ASTM D7415 >30 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>50</td> <td>53</td> <td>46</td> <td></td>	Molybdenum	ppm	ASTM D5185m	50	53	46	
Calcium ppm ASTM D5185m 1510 1129 1035 Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 870 938 820 Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >+100 33 28 Sodium ppm ASTM D5185m >+100 33 28 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 0 0.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.8 FLUID DEGRADATION method limit/base	Manganese	ppm	ASTM D5185m	0	12	11	
Phosphorus ppm ASTM D5185m 780 729 678 Zinc ppm ASTM D5185m 870 938 820 Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 33 28 Sodium ppm ASTM D5185m 16 4 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 0 0.1 Sulfation Abs/cm *ASTM D7415 >30 20.5 19.8 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm *ASTM D7414 >25 19.	Magnesium	ppm	ASTM D5185m	560	824	733	
Zinc ppm ASTM D5185m 870 938 820 Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 33 28 Sodium ppm ASTM D5185m 16 4 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % *ASTM D7844 0 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.8 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm *ASTM D7414 >25 19.0 17.6	Calcium	ppm	ASTM D5185m	1510	1129	1035	
Soulfur ppm ASTM D5185m 870 938 820	Phosphorus	ppm	ASTM D5185m	780	729	678	
Sulfur ppm ASTM D5185m 2040 2925 2528 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 33 28 Sodium ppm ASTM D5185m 16 4 Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 0 0.1 Sollfation Abs/.1mm *ASTM D7624 >20 10.8 9.0 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm *ASTM D7414 >25 19.0 17.6	Zinc		ASTM D5185m	870	938	820	
Silicon ppm ASTM D5185m >+100 33 28	Sulfur		ASTM D5185m	2040	2925	2528	
Sodium	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 100 43 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 0 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.8 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm *ASTM D7414 >25 19.0 17.6	Silicon	ppm	ASTM D5185m	>+100	33	28	
INFRA-RED	Sodium	ppm	ASTM D5185m		16	4	
Soot %	Potassium	ppm	ASTM D5185m	>20	100	43	
Nitration Abs/cm *ASTM D7624 >20 10.8 9.0 Sulfation Abs/.1mm *ASTM D7615 >30 20.5 19.8 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 19.0 17.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.8 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 19.0 17.6	Soot %	%	*ASTM D7844		0	0.1	
Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.8 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 19.0 17.6	Nitration	Abs/cm	*ASTM D7624	>20	10.8	9.0	
Oxidation		Abs/.1mm	*ASTM D7415	>30	20.5	19.8	
	FLUID DEGRAD	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	19.0	17.6	
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	4.9	7.5	



OIL ANALYSIS REPORT







Laboratory Sample No. Lab Number **Unique Number**

: GFL0090686 : 05938069 : 10628681

Test Package : FLEET (Additional Tests: Glycol) To discuss this sample report, contact Customer Service at 1-800-237-1369.

Received

Diagnosed

Diagnostician

: 30 Aug 2023

: 31 Aug 2023

: Don Baldridge

* - 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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