

OIL ANALYSIS REPORT

Sample Rating Trend

ALS



Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40 (30 QTS)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain high. Test for glycol is negative.

Fluid Condition

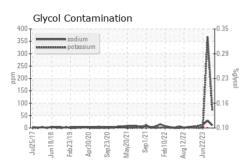
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

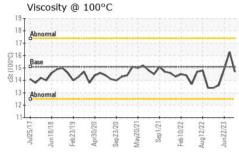
COOL CHEMICA

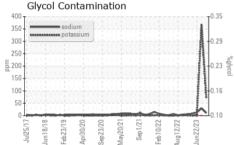
Sample Date Client Info 13 Mar 2024 14 Sep 2023 22 Jun 2023 Machine Age hrs Client Info 16942 16358 15885 Oil Age hrs Client Info 600 600 600 Sample Status Client Info Changed NEG NEG NEG Water WC Method >0.1 NEG NEG NEG NEG Iron ppm ASTM 05165m >50 19 23 24 Chromium ppm ASTM 05165m >2 <1 2 1 Nickel ppm ASTM 05165m >3 0 0 <1 2 1 Silver ppm ASTM 05165m >30 10 2 10 <1 1 3 Silver ppm ASTM 05165m >30 10 <1 <	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 16942 16358 15885 Oil Age hrs Client Info 600 600 600 Sample Status Client Info Changed Changed Changed Changed Sample Status Method Ilmit/base current history1 Mistory2 Water WC Method >0.1 NEG NEG NEG Wetar method Ilmit/base current history1 history2 Iron ppm ASTM D5185m >50 19 23 24 Chromium ppm ASTM D5185m >50 19 23 24 Chromium ppm ASTM D5185m >50 19 23 24 Chromium ppm ASTM D5185m >30 0 0 0 Silver ppm ASTM D5185m >30 10 2 10 Copper ppm ASTM D5185m >30 10 <1	Sample Number		Client Info		GFL0101791	GFL0074979	GFL0047433
Oil Age hrs Client Info 600 600 600 Oil Changed Client Info Changed Changed Changed Sample Status Image Imaged SEVERE NORMAL 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 D5186 >50 19 23 24 Chromium ppm ASTM D5186 >2 <1	Sample Date		Client Info		13 Mar 2024	14 Sep 2023	22 Jun 2023
Oil Changed Sample StatusClient InfoChanged ABNORMALChanged SEVEREChanged NORMALCONTAMINATIONmethodlimit/basecurrenthistory1history2WaterWC Method>0.1NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185n>50192324ChromiumppmASTM D5185n>2-121NickelppmASTM D5185n>2-10<1	Machine Age	hrs	Client Info		16942	16358	15885
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Water WC Method >0.1 NEG NEG NEG WEAR METALS method limil/base current history1 history2 Iron ppm ASTM D5185m >50 19 23 24 Chromium ppm ASTM D5185m >2 <1	Sample Status				ABNORMAL	SEVERE	NORMAL
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Chromium ppm ASTM D5185m >4 3 3 5 Nickel ppm ASTM D5185m >2 <1 2 1 Titanium ppm ASTM D5185m >2 <1 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Auminum ppm ASTM D5185m >30 10 2 10 Copper ppm ASTM D5185m >30 10 2 10 Cadmium ppm ASTM D5185m >30 10 2 10 Cadmium ppm ASTM D5185m >35 1 1 4 Cadmium ppm ASTM D5185m 60 <14 6 13 Baraum ppm ASTM D5185m 50 14 46 13 Baraum ppm ASTM D5185m 50 61 55 69 Marganese ppm ASTM D5185m 560 625 615	WEAR METAL	S	method	limit/base	current	history1	history2
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 14 46 13 Barium ppm ASTM D5185m 50 61 55 69 Manganese ppm ASTM D5185m 50 61 1 4 Magnesium ppm ASTM D5185m 560 625 615 775 Calcium ppm ASTM D5185m 560 625 615 775 Calcium ppm ASTM D5185m 780 805 865 981 Zinc ppm ASTM D5185m 780 805 865 981 Zinc ppm ASTM D5185m 2040 2561 2720 3257 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185m >4100 7 18 12 Sodium ppm ASTM D5185m >20	Vanadium	ppm	ASTM D5185m		0	<1	<1
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Manganese ppm ASTM D5185m 0 1 1 4 Magnesium ppm ASTM D5185m 560 625 615 775 Calcium ppm ASTM D5185m 1510 1787 1733 2096 Phosphorus ppm ASTM D5185m 780 805 865 981 Zinc ppm ASTM D5185m 770 1084 1087 1239 Sulfur ppm ASTM D5185m 2040 2561 2720 3257 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >4100 7 18 12 Sodium ppm ASTM D5185m >20 74 368 2 Glycol % *ASTM D7844 0 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0	Barium	ppm	ASTM D5185m	5	0	0	0
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Sodium ppm ASTM D5185m 11 29 13 Potassium ppm ASTM D5185m >20 74 368 2 Glycol % *ASTM D2982 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.6 18.6 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 13.4 27.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	CONTAMINAN	TS	method	limit/base	current	history1	history2
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Glycol % *ASTM D2982 ▲ 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.10 0.1 Nitration Abs/cm *ASTM D7624 >20 12.6 18.6 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 13.4 27.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	Sodium	ppm			11		13
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.6 18.6 12.1 Sulfation Abs/.tmm *ASTM D7415 >30 26.3 13.4 27.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 22.3 24.0 23.3	Potassium	ppm	ASTM D5185m	>20	<u> </u>		2
Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 12.6 18.6 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 13.4 27.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	Glycol	%	*ASTM D2982			▲ 0.10	
Nitration Abs/cm *ASTM D7624 >20 12.6 18.6 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 13.4 27.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 26.3 13.4 27.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	Soot %	%	*ASTM D7844		0	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	Nitration	Abs/cm	*ASTM D7624	>20	12.6	18.6	12.1
Oxidation Abs/.1mm *ASTM D7414 >25 22.3 24.0 23.3	Sulfation	Abs/.1mm	*ASTM D7415	>30	26.3	13.4	27.7
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 3.9 31.3 4.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	22.3	24.0	23.3
	Base Number (BN)		ASTM D2896	10.2	3.9	31.3	4.8



OIL ANALYSIS REPORT



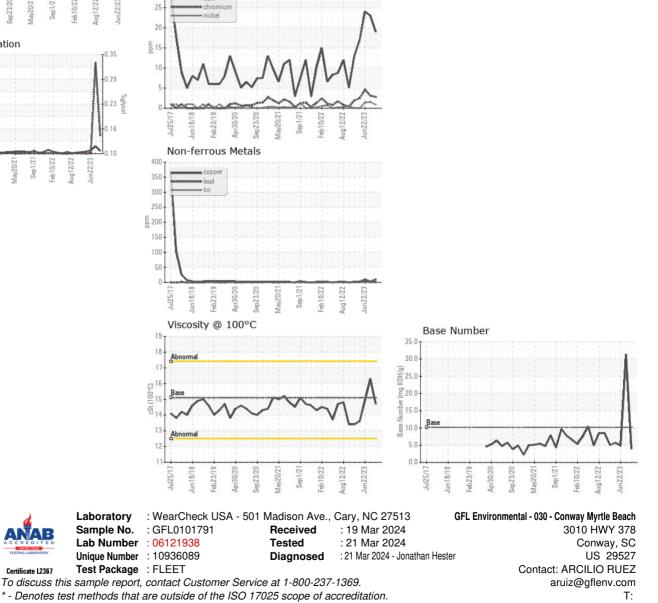




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	▲ 0.2%	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	14.7	16.3	14.9
GRAPHS						

Ferrous Alloys

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

Certificate L2367

Submitted By: TECHNICIAN ACCOUNT

F: