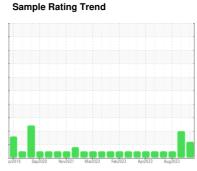


OIL ANALYSIS REPORT

(YA150043) 3842C

Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40 (46 GAL)





DIAGNOSIS

Recommendation

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

All component wear rates are normal.

Contamination

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

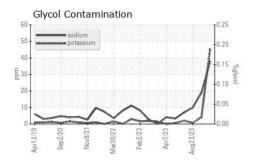
Fluid Condition

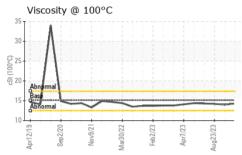
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

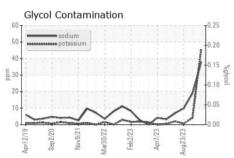
Sample Number Client Info GFL0090000 GFL0080527 GFL008052 GFL0080527 GFL0080523 23 Aug 20 Machine Age hrs Client Info 20552 4996 4996 4996 Oil Age hrs Client Info 600 4996 4996 4996 Coll Age hrs Client Info Not Changd Changed Changed Sample Status Client Info Not Changd Changed Changed ABNORMAL ABNORMAL NORMAL Variet WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >4 <1	(46 GAL)							
Sample Date Client Info 03 Feb 2024 17 Oct 2023 23 Aug 20 Machine Age hrs Client Info 20652 4996 4996 4996 Oil Age hrs Client Info 600 4996 4996 4996 Oil Changed Client Info 600 4996 4996 4996 Sample Status ABNORMAL Ned Changed Changed Changed CONTAMINATION method limit/base current history1 history1 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history1 WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >3 0 0 0	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Machine Age	Sample Number		Client Info		GFL0090000	GFL0080527	GFL0080566	
Oil Age hrs Client Info 600 4996 4996 Oil Changed Sample Status Client Info Not Changed ABNORMAL Changed Changed Changed Changed ABNORMAL NORMAL CONTAMINATION method limit/base current history1 history1 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >4 <1 2 1 Nickel ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 Copper ppm ASTM D5185m >30 5 \$31 15 Capper ppm ASTM D5185m >3 2 2	Sample Date		Client Info		03 Feb 2024	17 Oct 2023	23 Aug 2023	
Coli Changed Changed Changed Changed Changed ABNORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		20652	4996	4996	
ABNORMAL ABNORMAL NORMAL	Oil Age	hrs	Client Info		600	4996	4996	
CONTAMINATION method limit/base current history1 history1 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >4 <1	Oil Changed		Client Info		Not Changd	Changed	Changed	
Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >4 <1 2 1 Nickel ppm ASTM D5185m >4 <1 2 1 Nickel ppm ASTM D5185m >0 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 2 5 6 Lead ppm ASTM D5185m >9 2 5 6 6 Lead ppm ASTM D5185m >9 2 5 6 2 2 Copper ppm ASTM D5185m >3 2 2 2 Tin ppm ASTM D5185m 0 0	Sample Status				ABNORMAL	ABNORMAL	NORMAL	
WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 9 11 11 Chromium ppm ASTM D5185m >4 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2	
Description	Water		WC Method	>0.1	NEG	NEG	NEG	
Chromium ppm ASTM D5185m >4 <1 2 1 Nickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >9 2 5 6 Aluminum ppm ASTM D5185m >9 2 5 6 Lead ppm ASTM D5185m >9 2 5 6 Copper ppm ASTM D5185m >30 5 31 15 Copper ppm ASTM D5185m >35 3 2 2 2 Irin ppm ASTM D5185m >4 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2	
STM D5185m >2	ron	ppm	ASTM D5185m	>50	9	11	11	
Description Description	Chromium	ppm	ASTM D5185m	>4	<1	2	1	
Soliver	Nickel	ppm	ASTM D5185m	>2	0	0	0	
Aluminum ppm ASTM D5185m >9 2 5 6 6 Lead ppm ASTM D5185m >30 5	Titanium	ppm	ASTM D5185m		0	0	0	
Lead ppm ASTM D5185m >30 5 31 15 Copper ppm ASTM D5185m >35 3 2 2 Tin ppm ASTM D5185m >4 0 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 50 11 7 11 Boron ppm ASTM D5185m 50 11 7 11 Boron ppm ASTM D5185m 50 55 57 59 Boron ppm ASTM D5185m 50 55 57 59 Manganesium ppm ASTM D5185m 50 547 651 700 Calcium ppm ASTM D5185m 780 657 835	Silver	ppm	ASTM D5185m	>3	0	0	0	
Copper ppm ASTM D5185m >35 3 2 2 Fin ppm ASTM D5185m >4 0 <1	Aluminum	ppm	ASTM D5185m	>9	2	5	6	
Trin	_ead	ppm	ASTM D5185m	>30	5	△ 31	15	
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 50 11 7 11 Barium ppm ASTM D5185m 50 55 57 59 Molybdenum ppm ASTM D5185m 50 55 57 59 Manganese ppm ASTM D5185m 50 55 57 59 Manganesium ppm ASTM D5185m 560 547 651 700 Calcium ppm ASTM D5185m 1510 1455 1610 1784 Phosphorus ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base cur	Copper	ppm	ASTM D5185m	>35	3	2	2	
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 50 11 7 11 Barium ppm ASTM D5185m 50 55 57 59 Molybdenum ppm ASTM D5185m 50 55 57 59 Manganese ppm ASTM D5185m 50 55 57 59 Magnesium ppm ASTM D5185m 560 547 651 700 Calcium ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m >20 46	Γin	ppm	ASTM D5185m	>4	0	<1	<1	
ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 50 11 7 11 Barium ppm ASTM D5185m 5 8 <1	/anadium	ppm	ASTM D5185m		0	0	0	
Soron ppm ASTM D5185m 50 11 7 11	Cadmium	ppm	ASTM D5185m		0	0	0	
Barium ppm ASTM D5185m 5 8 <1 0 Molybdenum ppm ASTM D5185m 50 55 57 59 Manganese ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 50 55 57 59 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 560 547 651 700 Calcium ppm ASTM D5185m 1510 1455 1610 1784 Phosphorus ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 870 947 1047 1102 Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m >20 46 4 <1 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 <th< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td>50</td><td>11</td><td>7</td><td>11</td></th<>	Boron	ppm	ASTM D5185m	50	11	7	11	
Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 560 547 651 700 Calcium ppm ASTM D5185m 1510 1455 1610 1784 Phosphorus ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 870 947 1047 1102 Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history3 Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m >20 46 4 <1	Barium	ppm	ASTM D5185m		8	<1	0	
Magnesium ppm ASTM D5185m 560 547 651 700 Calcium ppm ASTM D5185m 1510 1455 1610 1784 Phosphorus ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 870 947 1047 1102 Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 46 4 <1	Molybdenum	ppm	ASTM D5185m	50	55	57	59	
Calcium ppm ASTM D5185m 1510 1455 1610 1784 Phosphorus ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 870 947 1047 1102 Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 46 4 <1	Manganese	ppm	ASTM D5185m	0	0	<1	<1	
Phosphorus ppm ASTM D5185m 780 657 835 857 Zinc ppm ASTM D5185m 870 947 1047 1102 Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 46 4 <1	Magnesium	ppm	ASTM D5185m	560	547	651	700	
Zinc ppm ASTM D5185m 870 947 1047 1102 Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 46 4 <1	Calcium	ppm	ASTM D5185m	1510	1455	1610	1784	
Sulfur ppm ASTM D5185m 2040 2279 2429 3082 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 46 4 <1	Phosphorus	ppm	ASTM D5185m	780	657	835	857	
CONTAMINANTS method limit/base current history1 history3 Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 46 4 <1	Zinc	ppm	ASTM D5185m	870	947	1047	1102	
Silicon ppm ASTM D5185m >+100 7 10 8 Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 ▲ 46 4 <1 INFRA-RED method limit/base current history1 history1 history Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.5 12.1 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 27.7 26.1 FLUID DEGRADATION method limit/base current history1 history	Sulfur	ppm	ASTM D5185m	2040	2279	2429	3082	
Sodium ppm ASTM D5185m 38 19 10 Potassium ppm ASTM D5185m >20 ▲ 46 4 <1 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.5 12.1 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 27.7 26.1 FLUID DEGRADATION method limit/base current history1 history	CONTAMINAN	TS	method	limit/base	current	history1	history2	
Potassium ppm ASTM D5185m >20 ▲ 46 4 <1 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.5 12.1 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 27.7 26.1 FLUID DEGRADATION method limit/base current history1 history	Silicon	ppm	ASTM D5185m	>+100	7	10	8	
INFRA-RED	Sodium	ppm	ASTM D5185m		38	19	10	
Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 >20 12.5 12.1 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 27.7 26.1 FLUID DEGRADATION method limit/base current history history	Potassium	ppm	ASTM D5185m	>20	46	4	<1	
Nitration Abs/cm *ASTM D7624 >20 12.5 12.1 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 27.7 26.1 FLUID DEGRADATION method limit/base current history1 history1 history	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation Abs/.1mm *ASTM D7415 >30 23.0 27.7 26.1 FLUID DEGRADATION method limit/base current history1 history	Soot %	%	*ASTM D7844		0.1	0.1	0	
FLUID DEGRADATION method limit/base current history1 history	Nitration	Abs/cm	*ASTM D7624	>20	12.5	12.1	11.5	
	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.0	27.7	26.1	
Oxidation	FLUID DEGRAD	OATION	method	limit/base	current	history1	history2	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.8	24.5	21.8	
Base Number (BN) mg KOH/g ASTM D2896 10.2 4.9 △ 2.9 4.1	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	4.9	<u>^</u> 2.9	4.1	



OIL ANALYSIS REPORT



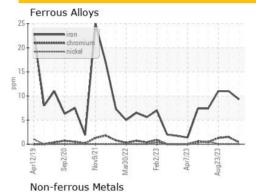




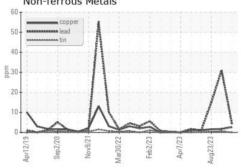
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

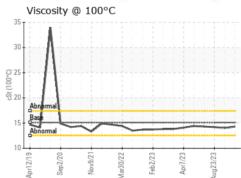
I LOID I HOI L		mounoa	mine bacc	oarrone	Thotory i	inotory.
Visc @ 100°C	cSt	ASTM D445	15.1	14.3	14.0	14.2

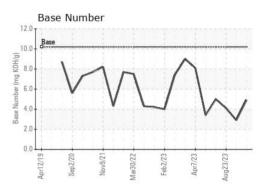
GRAPHS



FILIID PROPERTIES method











Laboratory Sample No. Lab Number : 06088537 Unique Number : 10875982

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

: GFL0090000

Received **Tested** Diagnosed

: 14 Feb 2024 : 15 Feb 2024

: 15 Feb 2024 - Jonathan Hester

GFL Environmental - 018 - Fayetteville 4621 Marracco Drive

Hope Mills, NC US 28348

Contact: Robert Carter robert.carter@gflenv.com T: (910)596-1170

Test Package: FLEET (Additional Tests: Glycol)

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)

F: