

OIL ANALYSIS REPORT

Area (P659749) Machine Id 10899C

Component Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (11 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

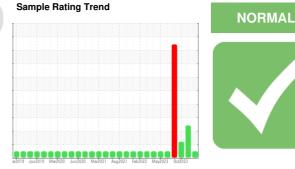
All component wear rates are normal.

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.

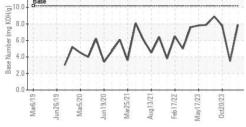


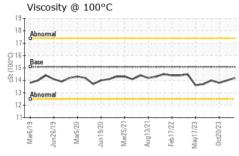
Sample Date Client Info 23 Feb 2024 13 Feb 2024 13 Feb 2024 20 Oct 2023 Machine Age hrs Client Info 13361 13305 12472 Oil Age hrs Client Info 56 12308 164 Oil Changed Client Info Not Changd Changed Not Changd Sample Status Client Info Not Changd ABNORMAL ATTENTION CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Immonit Water WC Method >0.1 NEG NEG Immonit Netry1 history2 Iron ppm ASTM D5185m >50 4 15 7 Titanium ppm ASTM D5185m >2 0 <1 1 1 2 Itanium ppm ASTM D5185m >3 0 <1 1 1 1 1 1 1	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 13361 13305 12472 Oil Age hrs Client Info 56 12308 164 Oil Changed Client Info 56 12308 164 Sample Status Client Info Not Changed ABNORMAL ATTENTION CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Glycol WC Method >0.1 NEG NEG NEG Water WC Method >101 Nickory2 WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185m >2 0 <1	Sample Number		Client Info		GFL0096967	GFL0110374	GFL0050905
Oil Age Inrs Client Info 56 12308 164 Oil Changed Client Info Not Changd Changed Not Changed Sample Status Imit base current history1 history2 Water WC Method >0.1 NEG NEG NEG Water WC Method >0.1 NEG NEG NEG Konn ppm ASTM 05185m >50 4 15 7 Chromium ppm ASTM 05185m >50 4 1 1 1 Kickel ppm ASTM 05185m >3 0 <1	Sample Date		Client Info		23 Feb 2024	13 Feb 2024	20 Oct 2023
Oil Changed Client Info Not Changd Changed Not Changed Sample Status Image: Control of the status Image: Control of the status ABNORMAL ATTENTION CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WeAR METALS method Imit/base current history1 history2 Kron ppm ASTM D5185m >50 4 15 7 Chromium pm ASTM D5185m >50 4 15 7 Chromium pm ASTM D5185m >50 4 1		hrs	Client Info		13361	13305	12472
Oil Changed Client Info Not Changd Changed Not Changed Sample Status Image: Control of the status Image: Control of the status ABNORMAL ATTENTION CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WeAR METALS method Imit/base current history1 history2 Kron ppm ASTM D5185m >50 4 15 7 Chromium pm ASTM D5185m >50 4 15 7 Chromium pm ASTM D5185m >50 4 1	Oil Age	hrs	Client Info		56	12308	164
Sample Status NORMAL ABNORMAL ATTENTION CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Glycol WC Method >0.1 NEG NEG NEG Wear WC Method WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 4 15 7 Chromium ppm ASTM D5185m >2 0 <1	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Water WC Method >0.1 NEG NEG NEG Glycol WC Method WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 <1	-				NORMAL	ABNORMAL	ATTENTION
Glycol WC Method WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 4 15 7 Chromium ppm ASTM D5185m >2 0 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 <1 Silver ppm ASTM D5185m >3 0 <1 1 2 Lead ppm ASTM D5185m >30 <1 1 <1 <1 Copper ppm ASTM D5185m >30 <1 1 <1 <1 Cadmium ppm ASTM D5185m >30 <1 1 <1 <1 ADDITVES method Imit/base current history1 history2 Boron ppm ASTM D5185m 50 39 7 30 Barium ppm ASTM D5185m 50	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 4 15 7 Chromium ppm ASTM D5185m >2 0 <11	Water		WC Method	>0.1	NEG	NEG	NEG
Iron ppm ASTM D5185m >50 4 15 7 Chromium ppm ASTM D5185m >4 <1	Glycol		WC Method				
Chromium ppm ASTM D5185m >4 <1 2 <1 Nickel ppm ASTM D5185m >2 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 <1 <1 Titanium ppm ASTM D5185m >3 0 <1	Iron	ppm	ASTM D5185m	>50	4	15	7
Titanium ppm ASTM D5185m <1 <1 <1 <1 Silver ppm ASTM D5185m >3 0 <1	Chromium	ppm	ASTM D5185m	>4	<1	2	<1
Silver ppm ASTM D5185m >3 0 <1 0 Aluminum ppm ASTM D5185m >9 1 1 2 Lead ppm ASTM D5185m >30 <1 1 <1 2 Lead ppm ASTM D5185m >30 <1 1 <1 <1 Copper ppm ASTM D5185m >35 <1 1 <1 <1 Vanadium ppm ASTM D5185m >4 0 <1 0 Vanadium ppm ASTM D5185m 50 39 7 30 Boron ppm ASTM D5185m 50 53 66 61 Magnesium ppm ASTM D5185m 0 <1 0 39 Boron ppm ASTM D5185m 50 53 66 60 567 Calcium ppm ASTM D5185m 50 586 600 567 Calcium ppm	Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Aluminum ppm ASTM D5185m >9 1 1 2 Lead ppm ASTM D5185m >30 <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead ppm ASTM D5185m >30 <1 1 <1 Copper ppm ASTM D5185m >35 <1	Silver	ppm	ASTM D5185m	>3	0	<1	0
Copper ppm ASTM D5185m >35 <1 1 <1 Tin ppm ASTM D5185m >4 0 <1	Aluminum	ppm	ASTM D5185m	>9	1	1	2
Tin ppm ASTM D5185m >4 0 <1 0 Vanadium ppm ASTM D5185m 0 <1	Lead	ppm	ASTM D5185m	>30	<1	1	<1
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>35	<1	1	<1
Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 39 7 30 Barium ppm ASTM D5185m 50 53 66 61 Molybdenum ppm ASTM D5185m 50 53 66 61 Magnesium ppm ASTM D5185m 50 53 66 600 567 Calcium ppm ASTM D5185m 560 586 600 567 Calcium ppm ASTM D5185m 560 586 600 567 Calcium ppm ASTM D5185m 1510 1463 1457 1392 Phosphorus ppm ASTM D5185m 780 777 754 759 Zinc ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method <thimit base<="" th=""> <</thimit>	Tin	ppm	ASTM D5185m	>4	0	<1	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 39 7 30 Barium ppm ASTM D5185m 5 <1	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 50 39 7 30 Barium ppm ASTM D5185m 5 <1	Cadmium	ppm	ASTM D5185m		0	<1	<1
Barium ppm ASTM D5185m 5 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 53 66 61 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	50	39	7	30
Manganese ppm ASTM D5185m 0 <1 1 0 Magnesium ppm ASTM D5185m 560 586 600 567 Calcium ppm ASTM D5185m 1510 1463 1457 1392 Phosphorus ppm ASTM D5185m 780 777 754 759 Zinc ppm ASTM D5185m 870 887 985 960 Sulfur ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >20 3 ▲ 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm< *ASTM D7624	Barium	ppm	ASTM D5185m	5	<1	0	3
Magnesium ppm ASTM D5185m 560 586 600 567 Calcium ppm ASTM D5185m 1510 1463 1457 1392 Phosphorus ppm ASTM D5185m 780 777 754 759 Zinc ppm ASTM D5185m 870 887 985 960 Sulfur ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+20 3 ▲ 56 ▲ 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/.mm< *ASTM D7414	Molybdenum	ppm	ASTM D5185m	50	53	66	61
Calcium ppm ASTM D5185m 1510 1463 1457 1392 Phosphorus ppm ASTM D5185m 780 777 754 759 Zinc ppm ASTM D5185m 870 887 985 960 Sulfur ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >20 3 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/.mm<*ASTM D7415	Manganese	ppm	ASTM D5185m	0	<1	1	0
Phosphorus ppm ASTM D5185m 780 777 754 759 Zinc ppm ASTM D5185m 870 887 985 960 Sulfur ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >20 3 ▲ 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current	Magnesium	ppm	ASTM D5185m	560	586	600	567
Zinc ppm ASTM D5185m 870 887 985 960 Sulfur ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+20 3 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.tmm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414	Calcium	ppm	ASTM D5185m	1510	1463	1457	1392
Sulfur ppm ASTM D5185m 2040 2376 2707 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Potassium ppm ASTM D5185m >20 3 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.timm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base	Phosphorus	ppm	ASTM D5185m	780	777	754	759
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m >+20 3 ▲ 56 ▲ 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.imm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414 >25 15.3 18.4 15.1	Zinc	ppm	ASTM D5185m	870	887	985	960
Silicon ppm ASTM D5185m >+100 4 8 6 Sodium ppm ASTM D5185m 8 32 27 Potassium ppm ASTM D5185m >20 3 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.tmm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 15.3 18.4 15.1				2040	2376	2707	2793
Sodium ppm ASTM D5185m 8 32 27 Potassium ppm ASTM D5185m >20 3 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.3 18.4 15.1		TS			current		
Potassium ppm ASTM D5185m >20 3 56 45 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.tmm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 15.3 18.4 15.1				>+100	4		
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.tmm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 15.3 18.4 15.1							
Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.3 18.4 15.1		ppm		>20	3		4 5
Nitration Abs/cm *ASTM D7624 >20 6.6 11.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.3 18.4 15.1				limit/base			
Sulfation Abs/.1mm *ASTM D7415 >30 18.8 23.5 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.3 18.4 15.1							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.3 18.4 15.1			*ASTM D7624	>20	6.6		
Oxidation Abs/.1mm *ASTM D7414 >25 15.3 18.4 15.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.8	23.5	18.3
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 7.9 A 3.5 7.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.3	18.4	15.1
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	7.9	3 .5	7.8



OIL ANALYSIS REPORT

Base Number





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	14.2	14.0	13.8
GRAPHS						

Ferrous Alloys 20 15 H 10 Aug13/21. un19/20 Mar25/21 Feb 17/22 May17/23 126/19 Mar5/20 Mar6/1 Non-ferrous Metals 10 Aug 13/2 eh17/7 Marg Viscosity @ 100°C Base Number 19 12.0 18 10. 17 (mg KOH/g) ()-00 15 8.0 B 6.0 Der 53 14 4.0 ase 13 Abnor 2 (12 11 0.0 Mar6/19 Aug13/21 Feb17/22 May17/23 Mar6/19 Jun26/19 Feb17/22 Aug13/21 Jun26/19 Mar5/20 Jun 19/20 Mar25/21 Mar5/20 May17/23 lun19/20 Mar25/21 GFL Environmental - 031 - Greenville/Spartanburg Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : GFL0096967 Received : 26 Feb 2024 1635 Antioch Church Rd Lab Number : 06099563 Tested : 27 Feb 2024 Piedmont, SC Unique Number : 10897793 Diagnosed : 27 Feb 2024 - Wes Davis US 29673 Test Package : FLEET Contact: TECHNICIAN ACCOUNT To discuss this sample report, contact Customer Service at 1-800-237-1369. catherine.anastasio@wearcheck.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Т:

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

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