

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 934025

Natural Gas Engine Fluid PETRO CANADA DURON GEO LD 15W40 (--- 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.

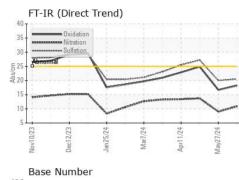
Fluid Condition

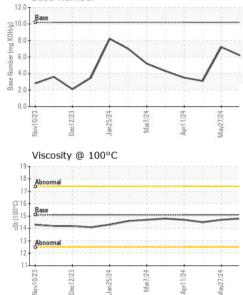
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample NumberClient InfoGFL012827GFL012887GFL012887GFL012887QEL011881Sample DateClient Info13 Jun 2024ZMay 2024ZMay 2024Machine AgehrsClient Info25181612386Oil AgeLient InfoNot ChangdNot ChangdChangedChangedSample StatusClient InfoNot ChangdNot ChangdChangedCONTAMINATIONmethodImit/baseCurrenthstorythstorytWaterWC MethodJ.NEGNEGNEGWearmethodimit/baseCurrent121248ChromiumppmASTM 5516m>50121248ChromiumppmASTM 5516m>2<1<13SilverppmASTM 5516m>2<1<13SilverppmASTM 5516m>30<1<1LeadppmASTM 5516m>30<13CopperppmASTM 5516m>3310<1ItaniumppmASTM 5516m5330<1SilverppmASTM 5516m535567<1CopperppmASTM 5516m505357710CopperppmASTM 5516m50535567ManganeseppmASTM 5516m50535567ManganeseppmASTM 5516m721010	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 2679 2547 2386 Oil Age irrs Client Info 2518 161 2386 Oil Changed Client Info Not Changd Not Changd Not Changd ABNORMAL Sample Status Imit/base current Nistory1 Nistory2 Water WC Method >0.1 NEG NEG NEG Wetar WC Method >0.1 NEG NEG NEG Iron ppm ASTM D5185m >50 12 12 48 Chromium ppm ASTM D5185m >4 <1 <1 3 Nickel ppm ASTM D5185m >3 0 <1 <1 Aluminum ppm ASTM D5185m >30 1 <1 6 Copper ppm ASTM D5185m >30 1 <1 3 Vanadium ppm ASTM D5185m >4 <1 <1 3 Copper	Sample Number		Client Info		GFL0122827	GFL0122840	GFL0118851
Oil Age Ins Client Info 2518 161 2386 Oil Changed Client Info Not Changd Not Changd Changed Sample Status Image Image Not Changd Not Changd ABNORMAL CONTAMINATION method Imitbase current history1 history2 Water WC Method >0.1 NEG NEG NEG Wear WC Method >0.1 NEG NEG NEG Chromium ppm ASTM 05165m >50 12 12 48 Chromium ppm ASTM 05165m >2 <1 <1 3 Nickel ppm ASTM 05185m >3 0 0 <1 1 Aluminum ppm ASTM 05185m >3 3 1 1 6 Adaminum ppm ASTM 05185m >3 3 1 1 1 1 Cadeadu ppm ASTM 05185m >3 3	Sample Date		Client Info		13 Jun 2024	27 May 2024	02 May 2024
Oil Changed Sample StatusClient InfoNot Changed NORMALNot Changed NORMALChanged ABNORMALCONTAMINATIONmethodlimit/basecurrenthistory1history2WaterWC Method >0.1NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5165m>50121248ChromiumppmASTM D5165m>23NickelppmASTM D5165m>2<	Machine Age	hrs	Client Info		2679	2547	2386
Sample Status NORMAL NORMAL NORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Wetar WC Method >0.1 NEG NEG NEG Iron ppm ASTM D5185m >50 12 12 48 Chromium ppm ASTM D5185m >2 <1 <1 3 Nickel ppm ASTM D5185m >2 <1 <1 A Silver ppm ASTM D5185m >3 0 0 <1 10 Lead ppm ASTM D5185m >3 1 1 6 20 Vanadium ppm ASTM D5185m >30 1 1 3 Vanadium ppm ASTM D5185m 0 0 <1 2 Cadmium ppm ASTM D5185m 5 0 <1 0 <	Oil Age	hrs	Client Info		2518	161	2386
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 12 12 48 Chromium ppm ASTM D5185m >2 <1 <1 3 Nickel ppm ASTM D5185m >2 <1 <1 3 Silver ppm ASTM D5185m >3 0 0 <1 Aduminum ppm ASTM D5185m >3 3 10 1 Lead ppm ASTM D5185m >3 3 10 1 Cadmium ppm ASTM D5185m >3 3 10 1 Cadmium ppm ASTM D5185m 50 14 23 4 Barium ppm ASTM D5185m 50 53 55 67	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 12 12 48 Chromium ppm ASTM D5185m >2 <1 <1 3 Nickel ppm ASTM D5185m >2 <1 <1 <1 3 Silver ppm ASTM D5185m >3 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 1 1	Sample Status				NORMAL	NORMAL	ABNORMAL
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Chromium ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 <1	Iron	ppm	ASTM D5185m	>50	12	12	48
Titanium ppm ASTM D5185m 0 <1	Chromium	ppm	ASTM D5185m	>4	<1	<1	3
Silver ppm ASTM D5185m >3 0 0 <1	Nickel	ppm	ASTM D5185m	>2	<1	<1	<u> </u>
Aluminum ppm ASTM D5185m >9 6 4 ▲ 10 Lead ppm ASTM D5185m >30 1 1 6 Copper ppm ASTM D5185m >35 3 3 10 Tin ppm ASTM D5185m >4 <1 3 3 Vanadium ppm ASTM D5185m >4 <1 3 3 Cadmium ppm ASTM D5185m 0 0 <1 0 Cadmium ppm ASTM D5185m 50 14 23 4 Boron ppm ASTM D5185m 50 14 23 4 Barium ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 50 647 597 710 Calcium ppm ASTM D5185m 750 66 67 <th>Titanium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th><1</th> <th><1</th>	Titanium	ppm	ASTM D5185m		0	<1	<1
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Copper ppm ASTM D5185m >35 3 3 10 Tin ppm ASTM D5185m >4 <1 <1 3 Vanadium ppm ASTM D5185m 0 0 <1 3 Cadmium ppm ASTM D5185m 0 0 <1 1 Cadmium ppm ASTM D5185m 50 14 23 4 Boron ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 50 53 55 67 Magnesium ppm ASTM D5185m 50 647 597 710 Calcium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 70 1041	Aluminum	ppm	ASTM D5185m	>9	6	4	1 0
Tin ppm ASTM D5185m >4 <1	Lead	ppm	ASTM D5185m	>30			
Vanadium ppm ASTM D5185m 0 0 <1	Copper	ppm	ASTM D5185m	>35	3	3	10
Cadmium ppm ASTM D5185m 0 <<1	Tin	ppm	ASTM D5185m	>4	<1	<1	3
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 14 23 4 Barium ppm ASTM D5185m 50 14 23 4 Barium ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 70 1041 997 1074 Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >10	Vanadium	ppm	ASTM D5185m		0	0	
Boron ppm ASTM D5185m 50 14 23 4 Barium ppm ASTM D5185m 5 0 <1 0 Molybdenum ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 0 2 1 5 Magnesium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185m >20	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 5 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 53 55 67 Manganese ppm ASTM D5185m 0 2 1 5 Magnesium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 1510 1727 1614 1780 Phosphorus ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 870 1041 997 1074 Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANT method Imit/base current history1 history2 Silicon ppm ASTM D5185m >4100 6 6 12 Sodium ppm ASTM D5185m >20 7 8 9 INFRA-RED method Imit/base current history1 history2 Soot % % 'ASTM D7644 20 <th>Boron</th> <th>ppm</th> <th>ASTM D5185m</th> <th>50</th> <th>14</th> <th>23</th> <th>4</th>	Boron	ppm	ASTM D5185m	50	14	23	4
Manganese ppm ASTM D5185m 0 2 1 5 Magnesium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 1510 1727 1614 1780 Phosphorus ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 870 1041 997 1074 Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7415 >30	Barium	ppm	ASTM D5185m	5	0	<1	0
Magnesium ppm ASTM D5185m 560 647 597 710 Calcium ppm ASTM D5185m 1510 1727 1614 1780 Phosphorus ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 870 1041 997 1074 Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/.mm *ASTM D7415 >30	Molybdenum	ppm	ASTM D5185m	50	53	55	
Calcium ppm ASTM D5185m 1510 1727 1614 1780 Phosphorus ppm ASTM D5185m 780 806 900 869 Zinc ppm ASTM D5185m 870 1041 997 1074 Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 12 Sodium ppm ASTM D5185m >+100 6 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/.m *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1m *ASTM D7415 >30	Manganese	ppm	ASTM D5185m		_	1	
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Zinc ppm ASTM D5185m 870 1041 997 1074 Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 12 Sodium ppm ASTM D5185m >+100 7 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.imm *ASTM D715 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414		ppm	ASTM D5185m	1510		1614	
Sulfur ppm ASTM D5185m 2040 2909 2829 2737 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 6 12 Sodium ppm ASTM D5185m >+100 6 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9							
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Silicon ppm ASTM D5185m >+100 6 6 12 Sodium ppm ASTM D5185m 7 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D715 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Sulfur	ppm	ASTM D5185m	2040	2909	2829	2737
Sodium ppm ASTM D5185m 7 6 11 Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 7 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Silicon	ppm	ASTM D5185m	>+100	6	6	12
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Sodium	ppm	ASTM D5185m		7	6	11
Soot % % *ASTM D7844 0 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Potassium	ppm	ASTM D5185m	>20	7	8	9
Nitration Abs/cm *ASTM D7624 >20 10.9 9.0 13.7 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.5 20.0 27.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Soot %	%	*ASTM D7844		0	0.2	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Nitration	Abs/cm	*ASTM D7624	>20	10.9	9.0	13.7
Oxidation Abs/.1mm *ASTM D7414 >25 18.2 16.7 24.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.5	20.0	27.2
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.2 6.2 7.2 3.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.2	16.7	24.9
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	6.2	7.2	3.1



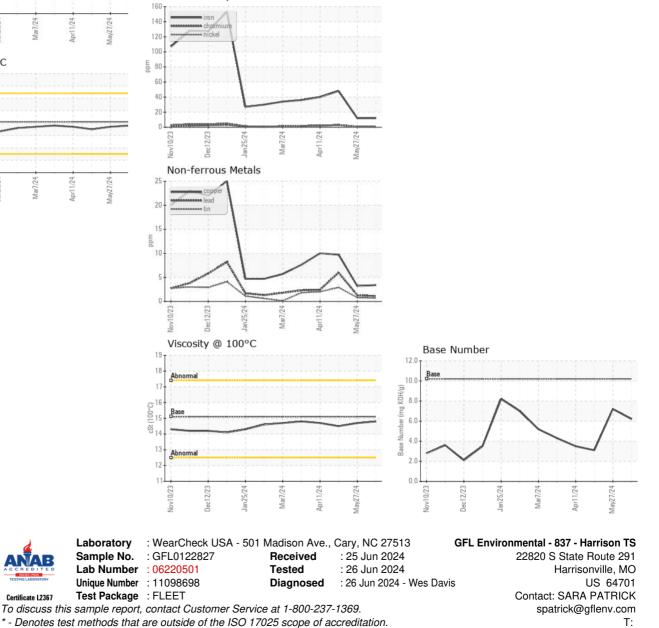
OIL ANALYSIS REPORT





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	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	14.8	14.7	14.5
GRAPHS						

Ferrous Alloys



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

Certificate 12367

Submitted By: JEREMY BROWN Page 2 of 2

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