

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

PETRO CANADA DURON GEO LD 15W40 (--- LTR)

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.

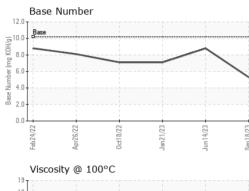
Fluid Condition

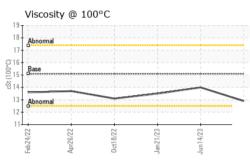
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI		mothed	limit/boos	ou treast	bistoryd	biotom/0
	MATION		limit/base		history1	history2
Sample Number		Client Info		GFL0081116	GFL0081560	GFL0071945
Sample Date		Client Info		18 Sep 2023	14 Jun 2023	21 Jan 2023
Machine Age	hrs	Client Info		21127	20755	20510
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Not Changd	Oil Added
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	14	11	9
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	0
Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	9	2	5
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	3	<1	5
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 50	current 0	history1 3	history2 4
	ppm ppm					
Boron		ASTM D5185m	50	0	3	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5 50	0 0	3 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	0 0 64	3 0 65	4 1 53
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	0 0 64 <1	3 0 65 <1	4 1 53 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	0 0 64 <1 843	3 0 65 <1 988	4 1 53 <1 748
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510	0 0 64 <1 843 1142	3 0 65 <1 988 1270	4 1 53 <1 748 1151
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780	0 0 64 <1 843 1142 889	3 0 65 <1 988 1270 1087	4 1 53 <1 748 1151 949
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870	0 0 64 <1 843 1142 889 1186	3 0 65 <1 988 1270 1087 1311	4 1 53 <1 748 1151 949 1141
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Iimit/base	0 0 64 <1 843 1142 889 1186 3501	3 0 65 <1 988 1270 1087 1311 3772	4 1 53 <1 748 1151 949 1141 3079
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 Iimit/base	0 0 64 <1 843 1142 889 1186 3501 current	3 0 65 <1 988 1270 1087 1311 3772 history1	4 1 53 <1 748 1151 949 1141 3079 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	50 50 50 560 1510 780 870 2040 Limit/base >25	0 0 64 <1 843 1142 889 1186 3501 current 4	3 0 65 <1 988 1270 1087 1311 3772 history1 6	4 1 53 <1 748 1151 949 1141 3079 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	50 50 50 560 1510 780 870 2040 Limit/base >25	0 0 64 <1 843 1142 889 1186 3501 current 4 5	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1	4 1 53 <1 748 1151 949 1141 3079 history2 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 limit/base >25	0 0 64 <1 843 1142 889 1186 3501 current 4 5 6	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1 3	4 1 53 <1 748 1151 949 1141 3079 history2 4 2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 2040 2040 2040 225 >25 >20	0 0 64 <1 843 1142 889 1186 3501 current 4 5 6 current 0	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1 3 <i>history1</i> 0.3	4 1 53 <1 748 1151 949 1141 3079 history2 4 2 3 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TTS	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 2040 2040 2040 225 >25 >20	0 0 64 <1 843 1142 889 1186 3501 current 4 5 6 Current	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1 3 3	4 1 53 <1 748 1151 949 1141 3079 history2 4 2 3 history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 Iimit/base >25 20 Iimit/base >20	0 0 64 <1 843 1142 889 1186 3501 <i>current</i> 4 5 6 <i>current</i> 0 11.3	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1 3 history1 0.3 7.8	4 1 53 <1 748 1151 949 1141 3079 history2 4 2 3 history2 0.3 8.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	50 50 560 1510 780 870 2040 2040 255 25 20 220 1imit/base >4 >20 30 30	0 0 64 <1 843 1142 889 1186 3501 current 4 5 6 current 0 11.3 25.3 current	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1 3 history1 0.3 7.8 19.2 history1	4 1 53 <1 748 1151 949 1141 3079 history2 4 2 3 history2 0.3 8.5 19.1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 560 1510 780 870 2040 imit/base >25 imit/base >4 >20	0 0 64 <1 843 1142 889 1186 3501 <u>current</u> 4 5 6 <u>current</u> 0 11.3 25.3	3 0 65 <1 988 1270 1087 1311 3772 history1 6 1 3 history1 0.3 7.8 19.2	4 1 53 <1 748 1151 949 1141 3079 history2 4 2 3 history2 0.3 8.5 19.1



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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				NONE	NONE
	scalar					NONE
						NONE
						NORML
						NORML
			>0.2			NEG
						NEG
						history2
	cSt	ASTM D445	15.1	12.9	14.0	13.5
14T		·	/			
12 - chromium		/				
10 -						
E 8	-					
6-						
4 -						
2						
	3 2					
b24/2	::18/2 n21/2	n14/2:	p18/2.			
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	als					
copper						
8 - ensurement tin						
6						
E dd						
4						
2						
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Feb24 Apr26,	Oct18 Jan21,	Jun 14,	Sep 18			
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19		i	12.0			
18 Abnormal		1		Base		
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		-	4.0			
13 Abnormal		<u>1</u>	Base			
12-						
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Feb24/22 Apr26/22	Oct18/22 Jan21/23	Jun14/23	Sep 18/23	Feb24/22 Apr26/22	0ct18/22 Jan21/23	Jun14/23
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: WearCheck USA -				GFL E	Invironmental	
	501 Madia Received	d : 19	ary, NC 27513 Sep 2023 Sep 2023	GFL E		- 885 - Orland W Landstreet R Orlando, F
	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys 10 10 10 10 10 10 10 10 10 10	White Metal scalar Yellow Metal scalar Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Emulsified Water scalar Free Water scalar Free Water scalar Free Water scalar Silt scalar Emulsified Water scalar Free Water scalar Non-ferrous Alloys Mon-ferrous Metals	White Metal scalar *Visual Yellow Metal scalar *Visual Precipitate scalar *Visual Silt scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Codor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Fullio PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys COUPLED COUPLED Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C	White Metal scalar *Visual NONE Yellow Metal scalar *Visual NONE Sitt scalar *Visual NONE Sitt scalar *Visual NONE Sand/Dirt scalar *Visual NONE Sand/Dirt scalar *Visual NONE Appearance scalar *Visual NORML Odor scalar *Visual NORML Codor scalar *Visual NORML Emulsified Water scalar *Visual NORML Emulsified Water scalar *Visual OC Free Water scalar *Visual Sol2 Free Water Scalar *Visual *Vis	White Metal scalar *Visual NONE NONE Precipitate scalar *Visual NONE NONE Sitt scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Cdor scalar *Visual NORML NORML Cdor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG Free Water scalar *Visual NORML NORML Visc @ 100°C cSt ASTM D445 15.1 12.9 GRAPHS Ferrous Alloys Viscosity @ 100°C Viscosity @ 100°C	White Metal scalar 'Visual NONE NONE NONE NONE Yellow Metal scalar 'Visual NONE NONE NONE Precipitate scalar 'Visual NONE NONE NONE Sitt scalar 'Visual NONE NONE NONE Sand/Dirt scalar 'Visual NONE NONE NONE Appearance scalar 'Visual NORML NORML NORML Odor Scalar 'Visual Sol.2 NEG Free Water scalar 'Visual NORML NORML Visc @ 100°C cSt ASTM D445 15.1 12.9 14.0 GRAPHS Ferrous Alloys Viscosity @ 100°C Viscosity @ 100°C

VISUAI method limit/base current history1 history2

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)

Certificate L2367