

OIL ANALYSIS REPORT

Sample Rating Trend









920018-192568

Component

Diesel Engine

CHEVRON DELO 400 MULTIGRADE 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

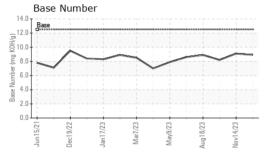
Fluid Condition

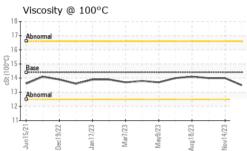
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0098445 GFL0098458 GFL008633 Sample Date Client Info 12 Dec 2023 14 Nov 2023 17 Oct 2023 17 Oct 2023 18 Nov 2023 18	0.4401 5 11505	11710	Jun2021 D	ec2022 Jan2023 Ma		Nov2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 289 143 8303 8303 143 8303	Sample Number		Client Info		GFL0098445	GFL0098458	GFL0086331
Oil Age	Sample Date		Client Info		12 Dec 2023	14 Nov 2023	17 Oct 2023
Coli Changed Client Info Not Changed NORMAL N	Machine Age	hrs	Client Info		8592		
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 NEG NEG	Oil Age	hrs			289	143	8303
Fuel	-		Client Info			N/A	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imitibase NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 2 6 14 Chromium ppm ASTM D5185m >20 0 0 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	2	6	14
Titanium ppm ASTM D5185m ≥2 0 0 <1 Silver ppm ASTM D5185m >2 <1 0 0 Aluminum ppm ASTM D5185m >20 2 3 5 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 4 4 1 Tin ppm ASTM D5185m >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 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	Chromium	ppm	ASTM D5185m	>20	0	0	<1
Silver	Nickel	ppm	ASTM D5185m	>5	<1	0	<1
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper ppm ASTM D5185m >330 4 4 1 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	2	3	5
Tin	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 151 50 92 39 Barium ppm ASTM D5185m 0.4 0 0 0 Molybdenum ppm ASTM D5185m 0.4 0 0 0 Manganese ppm ASTM D5185m 250 72 84 75 Manganesium ppm ASTM D5185m 0 852 985 847 Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m >225 4 5	Copper	ppm	ASTM D5185m	>330	4	4	1
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 151 50 92 39 Barium ppm ASTM D5185m 0.4 0 0 0 Molybdenum ppm ASTM D5185m 250 72 84 75 Manganese ppm ASTM D5185m 250 72 84 75 Magnesium ppm ASTM D5185m 0 852 985 847 Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 151 50 92 39	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0.4 0 0 0 Molybdenum ppm ASTM D5185m 250 72 84 75 Manganese ppm ASTM D5185m 250 72 84 75 Manganese ppm ASTM D5185m 2046 1102 1323 1108 Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limi	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 250 72 84 75 Manganese ppm ASTM D5185m 250 72 84 75 Magnesium ppm ASTM D5185m 0 852 985 847 Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 2046 1102 1323 1108 Zinc ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>151</td> <th>50</th> <td>92</td> <td>39</td>	Boron	ppm	ASTM D5185m	151	50	92	39
Manganese ppm ASTM D5185m <1 <1 0 Magnesium ppm ASTM D5185m 0 852 985 847 Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m >20 2 2 4 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4	Barium	ppm	ASTM D5185m	0.4	0	0	0
Magnesium ppm ASTM D5185m 0 852 985 847 Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m >20 2 2 4 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	250	72	84	75
Calcium ppm ASTM D5185m 2046 1102 1323 1108 Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m >20 2 2 4 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION *ASTM D	Manganese	ppm	ASTM D5185m		<1	<1	0
Phosphorus ppm ASTM D5185m 1043 1006 1061 926 Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m 20 2 2 4 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7414 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION *ASTM D	Magnesium	ppm	ASTM D5185m	0	852	985	847
Zinc ppm ASTM D5185m 943 1172 1295 1131 Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m 20 2 2 4 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Calcium	ppm	ASTM D5185m	2046	1102	1323	1108
Sulfur ppm ASTM D5185m 5012 3015 3449 3459 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m 4 3 6 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Phosphorus	ppm	ASTM D5185m	1043	1006	1061	926
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m 4 3 6 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Zinc	ppm	ASTM D5185m	943	1172	1295	1131
Silicon ppm ASTM D5185m >25 4 5 7 Sodium ppm ASTM D5185m 4 3 6 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Sulfur	ppm	ASTM D5185m	5012	3015	3449	3459
Sodium ppm ASTM D5185m 4 3 6 Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Silicon	ppm	ASTM D5185m	>25	4	5	7
INFRA-RED	Sodium	ppm	ASTM D5185m		4	3	6
Soot % % *ASTM D7844 >4 0.2 0.3 0.8 Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Potassium	ppm	ASTM D5185m	>20	2	2	4
Nitration Abs/cm *ASTM D7624 >20 5.8 6.1 8.7 Sulfation Abs/.1mm *ASTM D7615 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.5 20.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Soot %	%	*ASTM D7844	>4	0.2	0.3	0.8
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Nitration	Abs/cm	*ASTM D7624	>20	5.8	6.1	8.7
Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.6 15.5	Sulfation	Abs/.1mm	*ASTM D7415	>30		19.5	20.5
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 12.5 8.9 9.1 8.2	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.8	14.6	15.5
	Base Number (BN)	mg KOH/g	ASTM D2896	12.5	8.9	9.1	8.2



OIL ANALYSIS REPORT

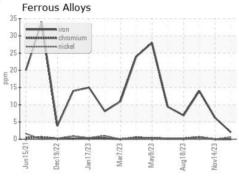




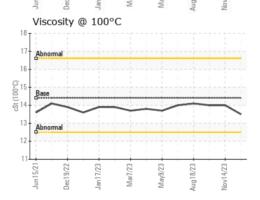
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

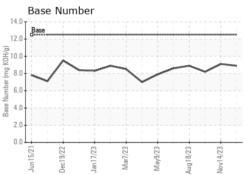
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	14.4	13.5	14.0	14.0	

GRAPHS











Certificate L2367

Laboratory Sample No.

Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0098445 : 06039106 : 10794335

Recieved Diagnosed

: 19 Dec 2023 : 20 Dec 2023 Diagnostician : Don Baldridge GFL Environmental - 180 - Tuscaloosa Hauling

4701 12TH ST NE Tuscaloosa, AL US 35404

Contact: FREDERICK ROGERS

fred.rogers@gflenv.com

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) T:

F: