

OIL ANALYSIS REPORT

Sample Rating Trend

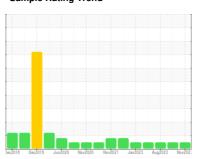
NORMAL



423035-402282

Component **Diesel Engine**

CHEVRON DELO 400 MULTIGRADE 15W40 (--- GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

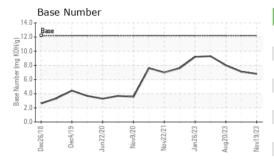
Fluid Condition

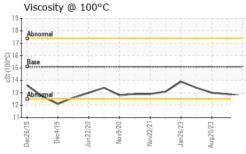
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0086395 GFL0086380 GFL0074788 Sample Date Client Info 19 Nov 2023 02 Oct 2023 20 Aug 2023 02 Oct 2023 20 Aug 2023 02 Oct 2023 20 Aug 2023 03 Oct 20 Aug 2023 0	0.4401 5.44505				20 Nov2021 Jan2023 Aug20		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0086395	GFL0086380	GFL0074784
Oil Age	Sample Date		Client Info		19 Nov 2023	02 Oct 2023	20 Aug 2023
Oil Changed Client Info N/A N/A N/A NORMAL	Machine Age	hrs	Client Info		20039	19900	19745
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 NEG N	Oil Age	hrs	Client Info		0	0	0
Fue	Oil Changed		Client Info		N/A	N/A	N/A
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imitibase Current history1 history2 WEAR METALS method limitibase current history1 history2 Iron ppm ASTM D5185m >120 12 11 8 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >5 1 2 <1 Silver ppm ASTM D5185m >2 <1 <1 <1 Silver ppm ASTM D5185m >20 13 12 10 Aluminum ppm ASTM D5185m >20 13 12 10 Lead ppm ASTM D5185m >40 <1 <1 0 Copper ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0	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	12	11	8
Titanium	Chromium	ppm	ASTM D5185m	>20	1	1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	1	2	<1
Aluminum ppm ASTM D5185m >20 13 12 10 Lead ppm ASTM D5185m >40 <1	Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Aluminum	Silver				0	0	0
Copper ppm ASTM D5185m >330 2 1 1 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	13	12	10
Tin	Lead	ppm	ASTM D5185m	>40	<1	<1	0
Tin	Copper		ASTM D5185m	>330	2	1	1
Vanadium ppm ASTM D5185m <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 <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	Tin				<1	<1	0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 3 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 52 54 58 Manganese ppm ASTM D5185m <1	Vanadium	• • •	ASTM D5185m		<1	<1	<1
Boron	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 52 54 58 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 692 670 758 Calcium ppm ASTM D5185m 1260 1070 1274 Phosphorus ppm ASTM D5185m 1360 935 917 978 Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % "	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 52 54 58 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 692 670 758 Calcium ppm ASTM D5185m 1260 1070 1274 Phosphorus ppm ASTM D5185m 1360 935 917 978 Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m >20 5 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2	Boron	ppm	ASTM D5185m		10	3	4
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 692 670 758 Calcium ppm ASTM D5185m 1260 1070 1274 Phosphorus ppm ASTM D5185m 1360 935 917 978 Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m >20 5 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 692 670 758 Calcium ppm ASTM D5185m 1260 1070 1274 Phosphorus ppm ASTM D5185m 1360 935 917 978 Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m >20 5 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 <td< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>52</th><td>54</td><td>58</td></td<>	Molybdenum	ppm	ASTM D5185m		52	54	58
Calcium ppm ASTM D5185m 1260 1070 1274 Phosphorus ppm ASTM D5185m 1360 935 917 978 Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/imm *ASTM D7415 >30 18.9 1	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 1360 935 917 978 Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION *ASTM D7414 >25	Magnesium	ppm	ASTM D5185m		692	670	758
Zinc ppm ASTM D5185m 1480 1188 1115 1208 Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25	Calcium	ppm	ASTM D5185m		1260	1070	1274
Sulfur ppm ASTM D5185m 2939 2937 3606 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Phosphorus	ppm	ASTM D5185m	1360	935	917	978
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Zinc	ppm	ASTM D5185m	1480	1188	1115	1208
Silicon ppm ASTM D5185m >25 9 8 6 Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Sulfur	ppm	ASTM D5185m		2939	2937	3606
Sodium ppm ASTM D5185m 6 8 5 Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 5 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Silicon	ppm	ASTM D5185m	>25	9	8	6
INFRA-RED	Sodium	ppm	ASTM D5185m		6	8	5
Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Potassium	ppm	ASTM D5185m	>20	5	6	3
Nitration Abs/cm *ASTM D7624 >20 8.9 7.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.9 17.5 17.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Soot %	%	*ASTM D7844	>4	0.3	0.2	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Nitration	Abs/cm	*ASTM D7624	>20	8.9	7.7	6.6
Oxidation Abs/.1mm *ASTM D7414 >25 15.1 14.1 13.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.9	17.5	17.2
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 12.2 6.8 7.1 8.0	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.1	14.1	13.5
	Base Number (BN)	mg KOH/g	ASTM D2896	12.2	6.8	7.1	8.0



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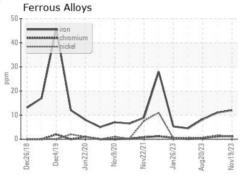


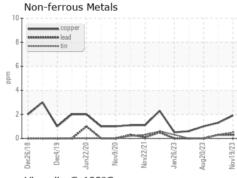


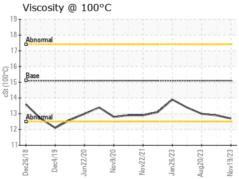
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

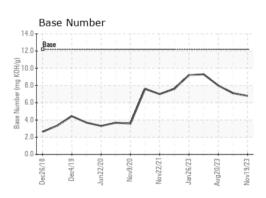
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.1	12.7	12.9	13.0

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10752092 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0086395 : 06012948

Received Diagnosed

: 20 Nov 2023 : 22 Nov 2023 Diagnostician : Jonathan Hester GFL Environmental - 816 - WCA of South Arkansas

3083 Smackover Hwy El Dorado, AR US 71730

Contact: Mike Howell mike.howell@gflenv.com T:

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)

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