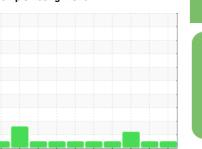


# **OIL ANALYSIS REPORT**

## Sample Rating Trend







Machine Id **727027-598**Component

Diesel Engine

CHEVRON DELO 400 XLE 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

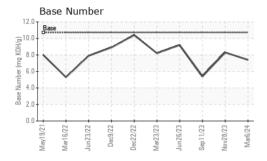
## **Fluid Condition**

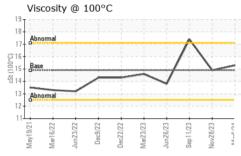
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   limit/base   current   history1   history2	(LE 15W40 ( (	GAL)	May2021 Mar2	022 Jun2022 Dec2022 Dec2	022 Mar2023 Jun2023 Sep2023 Nov	2023 Mar2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         16442         0         15448           Oil Age         hrs         Client Info         0         0         0         572           Dil Changed         Client Info         Not Changd         Not Changd         Not Changd         Not Changd         Not Changd         ABNORMAL           CONTAMINATION         method         Imitibase         current         history1         history2           Fuel         WC Method         >3.0         <1.0	Sample Number		Client Info		GFL0104601	GFL0096309	GFL0055610
Dil Age	Sample Date		Client Info		06 Mar 2024	28 Nov 2023	11 Sep 2023
Dil Changed Sample Status	Machine Age	hrs	Client Info		16442	0	15448
CONTAMINATION   method   minit/base   current   history1   history2	Oil Age	hrs	Client Info		0	0	572
Fuel	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Fuel WC Method S.0.	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol         WC Method WC Method         >0.2         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         72         76         96           Chromium         ppm         ASTM D5185m         >20         3         4         4           Vickel         ppm         ASTM D5185m         >2         1         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
NEG   NEG	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >120         72         76         96           Chromium         ppm         ASTM D5185m         >20         3         4         4           Nickel         ppm         ASTM D5185m         >20         3         4         4           Filturium         ppm         ASTM D5185m         >2         8         7         7           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         9         10         9           e-ead         ppm         ASTM D5185m         >20         9         10         9           e-ead         ppm         ASTM D5185m         >20         2         1         1           Copper         ppm         ASTM D5185m         >330         2         2         4           Copper         ppm         ASTM D5185m         0         0         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Post	Glycol		WC Method		NEG	NEG	NEG
Chromium   Dpm   ASTM D5185m   >20   3	WEAR METAL	.S	method	limit/base	current	history1	history2
Silver	ron	ppm	ASTM D5185m	>120	72	76	96
Silver	Chromium	ppm	ASTM D5185m	>20	3	4	4
Silver	Nickel	ppm	ASTM D5185m	>5	<1	<1	1
Aluminum ppm ASTM D5185m >20 9 10 9  Lead ppm ASTM D5185m >40 1 2 5  Copper ppm ASTM D5185m >15 <1 0 <1  Vanadium ppm ASTM D5185m >15 <1 0 <1  Cadmium ppm ASTM D5185m 0 0 0 <1  Cadmium ppm ASTM D5185m 0 0 0 0  ADDITIVES method limit/base current history1 history2  Boron ppm ASTM D5185m 0 0 2 0  ADDITIVES method limit/base 115 78  Barium ppm ASTM D5185m 79 115 78  Manganese ppm ASTM D5185m 79 115 78  Manganese ppm ASTM D5185m 713 833 815  Calcium ppm ASTM D5185m 1646 1838 1743  Phosphorus ppm ASTM D5185m 760 836 872 794  Zinc ppm ASTM D5185m 830 950 1032 975  Sulfur ppm ASTM D5185m 2770 3263 3475 3487  CONTAMINANTS method limit/base current history1 history2  Silicon ppm ASTM D5185m >25 11 16 15  Sodium ppm ASTM D5185m >20 8 11 9  INFRA-RED method limit/base current history1 history2  Dxidation Abs/.1mm *ASTM D7415 >30 34.4 33.1 38.4  FLUID DEGRADATION method limit/base current history1 history2  Dxidation Abs/.1mm *ASTM D7414 >25 31.8 29.1 37.7	Titanium	ppm	ASTM D5185m	>2	8	7	7
Lead         ppm         ASTM D5185m         >40         1         2         5           Copper         ppm         ASTM D5185m         >330         2         2         4           Fin         ppm         ASTM D5185m         >15         <1         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Barium         ppm         ASTM D5185m         94         107         79           Barium         ppm         ASTM D5185m         99         115         78           Magnesium         ppm         ASTM D5185m         79         115         78           Magnesium         ppm         ASTM D5185m         713         833         815           Calcicium         ppm         ASTM D5185m         1646         1838         1743           Phosphorus         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm </td <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;2</td> <th>0</th> <td>0</td> <td>0</td>	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper         ppm         ASTM D5185m         >330         2         2         4           Fin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	9	10	9
Tin	_ead	ppm	ASTM D5185m	>40	1	2	5
Azanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         94         107         79           Barium         ppm         ASTM D5185m         0         2         0           Molybdenum         ppm         ASTM D5185m         79         115         78           Manganese         ppm         ASTM D5185m         713         833         815           Calcium         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         270         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm	Copper	ppm	ASTM D5185m	>330	2	2	4
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         94         107         79           Barium         ppm         ASTM D5185m         0         2         0           Molybdenum         ppm         ASTM D5185m         79         115         78           Magnesium         ppm         ASTM D5185m         <1	Γin	ppm	ASTM D5185m	>15	<1	0	<1
ADDITIVES   method   limit/base   current   history1   history2	Vanadium	ppm	ASTM D5185m		0	0	<1
Soron   ppm   ASTM D5185m   ppm   astm D518	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         2         0           Molybdenum         ppm         ASTM D5185m         79         115         78           Manganese         ppm         ASTM D5185m         -1         0         1           Magnesium         ppm         ASTM D5185m         713         833         815           Calcium         ppm         ASTM D5185m         1646         1838         1743           Phosphorus         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Socium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >4         3.6         3.4         4.4           Nitration <td< td=""><td>ADDITIVES</td><td></td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></td<>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         79         115         78           Manganese         ppm         ASTM D5185m         <1         0         1           Magnesium         ppm         ASTM D5185m         713         833         815           Calcium         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         830         950         1032         975           Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Godium         ppm         ASTM D5185m         >20         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4         3.6         3.4         4         4	Boron	ppm	ASTM D5185m		94	107	79
Manganese         ppm         ASTM D5185m         <1         0         1           Magnesium         ppm         ASTM D5185m         713         833         815           Calcium         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         830         950         1032         975           Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Godium         ppm         ASTM D5185m         >25         11         16         15           Godium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4         3.6         3.4         4.4           Nitration         Abs/cm         *ASTM D7845         >20         19.4         18.5	Barium	ppm	ASTM D5185m		0	2	0
Magnesium         ppm         ASTM D5185m         713         833         815           Calcium         ppm         ASTM D5185m         1646         1838         1743           Phosphorus         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         830         950         1032         975           Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >25         11         16         15           Sodium         ppm         ASTM D5185m         >20         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>79</th> <td>115</td> <td>78</td>	Molybdenum	ppm	ASTM D5185m		79	115	78
Calcium         ppm         ASTM D5185m         1646         1838         1743           Phosphorus         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         830         950         1032         975           Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Sodium         ppm         ASTM D5185m         >20         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         4.4           Nitration         Abs/.mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limi	Manganese	ppm	ASTM D5185m		<1	0	1
Phosphorus         ppm         ASTM D5185m         760         836         872         794           Zinc         ppm         ASTM D5185m         830         950         1032         975           Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Sodium         ppm         ASTM D5185m         >20         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         4.4           Nitration         Abs/cm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	Magnesium	ppm	ASTM D5185m		713	833	815
Zinc         ppm         ASTM D5185m         830         950         1032         975           Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Sodium         ppm         ASTM D5185m         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         ▲ 4.4           Nitration         Abs/.mm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414	Calcium	ppm	ASTM D5185m		1646	1838	1743
Sulfur         ppm         ASTM D5185m         2770         3263         3475         3487           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Sodium         ppm         ASTM D5185m         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         4.4           Nitration         Abs/cm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	Phosphorus	ppm	ASTM D5185m	760	836	872	794
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         11         16         15           Sodium         ppm         ASTM D5185m         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         ▲ 4.4           Nitration         Abs/cm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	Zinc	ppm	ASTM D5185m	830	950	1032	975
Solition   ppm   ASTM D5185m   >25   11   16   15	Sulfur	ppm	ASTM D5185m	2770	3263	3475	3487
Sodium         ppm         ASTM D5185m         8         13         16           Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         ▲ 4.4           Nitration         Abs/cm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         8         11         9           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         ▲ 4.4           Nitration         Abs/cm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	Silicon	ppm	ASTM D5185m	>25	11	16	15
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         3.6         3.4         ▲ 4.4           Nitration         Abs/cm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	Sodium	ppm	ASTM D5185m		8	13	16
Soot %         %         *ASTM D7844 >4         3.6         3.4         ▲ 4.4           Nitration         Abs/cm         *ASTM D7624 >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         34.4         33.1         38.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         31.8         29.1         37.7	Potassium	ppm	ASTM D5185m	>20	8	11	9
Nitration         Abs/cm         *ASTM D7624         >20         19.4         18.5         22.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         34.4         33.1         38.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         31.8         29.1         37.7	Soot %	%	*ASTM D7844	>4	3.6	3.4	<b>4.4</b>
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 31.8 29.1 37.7	Vitration	Abs/cm	*ASTM D7624	>20	19.4	18.5	22.5
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	34.4	33.1	38.4
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.7 7.4 8.3 5.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	31.8	29.1	37.7
	Base Number (BN)		ASTM D2896	10.7			5.4



# **OIL ANALYSIS REPORT**

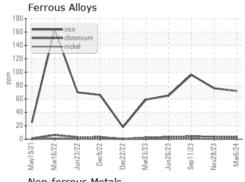


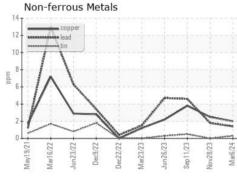


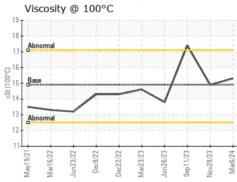
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

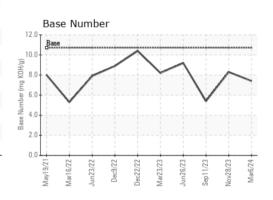
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	14.9	15.3	14.9	<u></u> 17.4	

## **GRAPHS**











Certificate L2367

Laboratory Sample No.

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

: GFL0104601 Lab Number : 06116352 Unique Number : 10925185 Test Package : FLEET

Received **Tested** Diagnosed

: 13 Mar 2024 : 14 Mar 2024 - Jonathan Hester

: 12 Mar 2024

GFL Environmental - 624 - Elmira Hauling 10164 M-32

Elmira, MI US 49730

Contact: ANDY GROBASKI andyg@americanwaste.org T: (989)370-2941

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)