

# **OIL ANALYSIS REPORT**

Sample Rating Trend







## Machine Id 3778C Component

**Natural Gas Engine** 

**CHEVRON DELO 400 NG (46 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       Sample Number     Client Info     GFL0066842     GFL0074437     GFL0050269       Sample Date     Client Info     10464     10464     10464     10464       Oil Age     hrs     Client Info     10464     10464     150       Oil Changed     Client Info     Changed     Changed     Changed     Changed       Sample Status     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     10     11     11       Iron     ppm     ASTM D5185m     >50     10     11     11       Nickel     ppm     ASTM D5185m     >50     10     11     11       Nickel     ppm     ASTM D5185m     >30     0     0     <1       Namium     ppm     ASTM D5185m     >30     0     0     <1       Namium     ppm     ASTM D5185m     >30     0     0			1ay2018 Mar20	19 Jan2020 May2020 No	v2020 May2021 Nov2021 Jul2022	Apr2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     10464     10464     10464     10464     10464     10464     10464     10464     10464     150       Oil Changed     Client Info     Changed     Changed	Sample Number		Client Info		GFL0066842	GFL0074437	GFL0050269
Oil Age     hrs     Client Info     10464     10464     150       Oil Changed     Changed     Changed     Changed     Changed     Changed       Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     10     11     11       Chromium     ppm     ASTM D5185m     >4     <1     <1     <1       Nickel     ppm     ASTM D5185m     >3     0     0     <1       Italiuminum     ppm     ASTM D5185m     >30     0     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0	Sample Date		Client Info		20 Jul 2023	07 Apr 2023	26 Aug 2022
Oil Changed Sample Status     Client Info MoRMAL     Changed ABNORMAL     Changed ABNORMAL     Changed NORMAL     Changed ABNORMAL     Changed NORMAL       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     10     11     11       Chromium     ppm     ASTM D5185m     >4     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     0     0     <1       Nickel     ppm     ASTM D5185m     >2     0     0     <1       Nitratium     ppm     ASTM D5185m     >3     0     0     <1       Aluminum     ppm     ASTM D5185m     >9     1     1     2     0       Lead     ppm     ASTM D5185m     >30     0     0     0     0     0       Copper     ppm     ASTM D5185m     >4     0     0     1     1     2     0     0     0     0     0     0     0 <t< th=""><th>Machine Age</th><th>hrs</th><th>Client Info</th><th></th><th>10464</th><th>10464</th><th>10464</th></t<>	Machine Age	hrs	Client Info		10464	10464	10464
Sample Status     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     10     11     11       Chromium     ppm     ASTM D5185m     >4     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     0     0     <1       Silver     ppm     ASTM D5185m     >2     0     0     <1       Aluminum     ppm     ASTM D5185m     >3     0     0     <1       Aluminum     ppm     ASTM D5185m     >9     1     1     2       Lead     ppm     ASTM D5185m     >30     0     0     0       Copper     ppm     ASTM D5185m     >35     <1     2     0       Tin     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     27     24     17     <	Oil Age	hrs	Client Info		10464	10464	150
Iron	•		Client Info		Changed	Changed	Changed
Iron	Sample Status				NORMAL	ABNORMAL	NORMAL
Chromium	WEAR METALS	3	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >2     0     0     <1	Iron	ppm	ASTM D5185m	>50	10	11	11
Titanium     ppm     ASTM D5185m     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     <1	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Altuminum     ppm     ASTM D5185m     >9     1     1     2       Lead     ppm     ASTM D5185m     >30     0     0     0       Copper     ppm     ASTM D5185m     >35     <1     2     0       Tin     ppm     ASTM D5185m     0     0     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     27     24     17       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     787     714     683       Calcium     ppm     ASTM D5185m     1425     1106     1466       Phosphorus     ppm <t< th=""><th>Titanium</th><th>ppm</th><th>ASTM D5185m</th><th></th><th>0</th><th>0</th><th>0</th></t<>	Titanium	ppm	ASTM D5185m		0	0	0
Lead     ppm     ASTM D5185m     >30     0     0     0       Copper     ppm     ASTM D5185m     >35     <1	Silver	ppm	ASTM D5185m	>3	0	0	
Copper     ppm     ASTM D5185m     >35     <1	Aluminum	ppm	ASTM D5185m	>9	1	1	2
Tin     ppm     ASTM D5185m     >4     0     0     <1		ppm	ASTM D5185m	>30	0	0	0
Vanadium     ppm     ASTM D5185m     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     27     24     17       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     <1	Copper	ppm	ASTM D5185m	>35	<1	2	0
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     27     24     17       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     787     714     683       Calcium     ppm     ASTM D5185m     1425     1106     1466       Phosphorus     ppm     ASTM D5185m     800     1017     632     833       Zinc     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >20     41     104     0       Glycol     % 'ASTM D5985m     <	Tin	ppm	ASTM D5185m	>4			
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     27     24     17       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     787     714     683       Calcium     ppm     ASTM D5185m     1425     1106     1466       Phosphorus     ppm     ASTM D5185m     800     1017     632     833       Zinc     ppm     ASTM D5185m     880     1232     770     1057       Sulfur     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     10     26     15       Potassium     ppm <th>Vanadium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Vanadium	ppm	ASTM D5185m		0	0	0
Boron     ppm     ASTM D5185m     27     24     17       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     <1     1     <1       Magnesium     ppm     ASTM D5185m     787     714     683       Calcium     ppm     ASTM D5185m     1425     1106     1466       Phosphorus     ppm     ASTM D5185m     800     1017     632     833       Zinc     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       CONTAMINANTS     method     limit/base     current     history1     history2       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >20     41     104 <t< th=""><th>ADDITIVES</th><th></th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     55     44     56       Manganese     ppm     ASTM D5185m     <1	Boron	ppm	ASTM D5185m		27	24	17
Manganese     ppm     ASTM D5185m     <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium     ppm     ASTM D5185m     787     714     683       Calcium     ppm     ASTM D5185m     1425     1106     1466       Phosphorus     ppm     ASTM D5185m     800     1017     632     833       Zinc     ppm     ASTM D5185m     880     1232     770     1057       Sulfur     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >+100     26     15       Potassium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     7.1     7.6     9.2	Molybdenum	ppm	ASTM D5185m		55	44	56
Calcium     ppm     ASTM D5185m     1425     1106     1466       Phosphorus     ppm     ASTM D5185m     800     1017     632     833       Zinc     ppm     ASTM D5185m     880     1232     770     1057       Sulfur     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1	Manganese	ppm	ASTM D5185m		<1	1	<1
Phosphorus     ppm     ASTM D5185m     800     1017     632     833       Zinc     ppm     ASTM D5185m     880     1232     770     1057       Sulfur     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.	Magnesium		ASTM D5185m		787	714	683
Zinc     ppm     ASTM D5185m     880     1232     770     1057       Sulfur     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >20     41     104     0       Potassium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     limit/base     current     history1     hist	Calcium	ppm	ASTM D5185m		1425	1106	1466
Sulfur     ppm     ASTM D5185m     3666     2035     2520       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >+100     26     15       Potassium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	Phosphorus	ppm	ASTM D5185m	800	1017	632	833
CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     >+100     26     15       Potassium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	-	ppm		880	-		
Silicon     ppm     ASTM D5185m     >+100     5     9     4       Sodium     ppm     ASTM D5185m     10     26     15       Potassium     ppm     ASTM D5185m     >20     41     104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	Sulfur	ppm	ASTM D5185m		3666	2035	2520
Sodium     ppm     ASTM D5185m     10     26     15       Potassium     ppm     ASTM D5185m     >20     41     ▲ 104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	CONTAMINAN	ΓS	method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     41     ▲ 104     0       Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	Silicon	ppm	ASTM D5185m	>+100	5	9	4
Glycol     %     *ASTM D2982     0.0     0.0        INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	Sodium	ppm	ASTM D5185m		10	26	15
INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2		ppm	ASTM D5185m	>20	41	<u> </u>	0
Soot %     %     *ASTM D7844     0     0.1     0.1       Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	Glycol	%	*ASTM D2982		0.0	0.0	
Nitration     Abs/cm     *ASTM D7624     >20     7.1     7.6     9.2       Sulfation     Abs/.1mm     *ASTM D7415     >30     18.6     20.1     20.3       FLUID DEGRADATION     method     limit/base     current     history1     history2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.6 20.1 20.3   FLUID DEGRADATION method limit/base current history1 history2	Soot %	%	*ASTM D7844		0	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2	Nitration	Abs/cm	*ASTM D7624	>20	7.1	7.6	9.2
	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.6	20.1	20.3
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.4</b> 16.9 16.7	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.4	16.9	16.7

Base Number (BN) mg KOH/g ASTM D2896 6.1

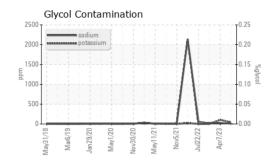
9.6

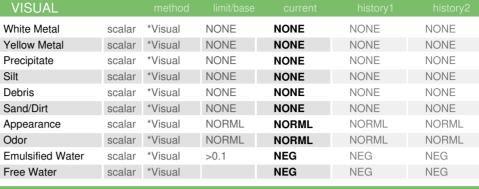
8.9

7.8



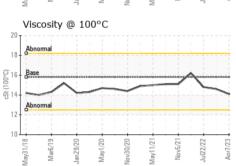
## **OIL ANALYSIS REPORT**





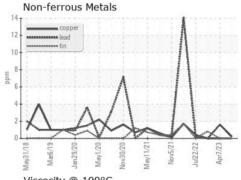
Base Nu	ımber					
12.0 (5)HOX 8.0 (5)HOX 8.0 (6) Base (7) Base (8) 2.0	<u> </u>	1	L		\_	
May31/18	Jan 29/20	Nov30/20	May11/21	Nov5/21	Jul22/22	Apr7/23

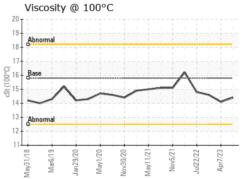
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.8	14.4	14.1	14.6

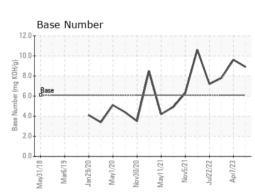


# Ferrous Alloys 120 80 E 60 40

**GRAPHS** 











Laboratory Sample No. Lab Number **Unique Number** 

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0066842 : 05904229

: 10565585 Test Package : FLEET ( Additional Tests: Glycol )

Received : 21 Jul 2023 Diagnosed : 26 Jul 2023 Diagnostician

: Don Baldridge

Hope Mills, NC US 28348 Contact: Robert Carter robert.carter@gflenv.com T: (910)596-1170 F:

4621 Marracco Drive

GFL Environmental - 018 - Fayetteville

Certificate L2367

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)