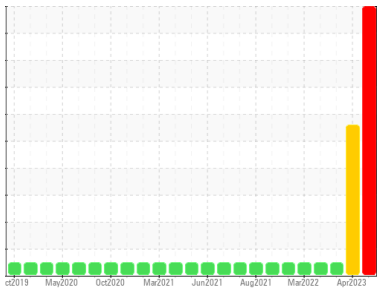
# PROBLEM SUMMARY

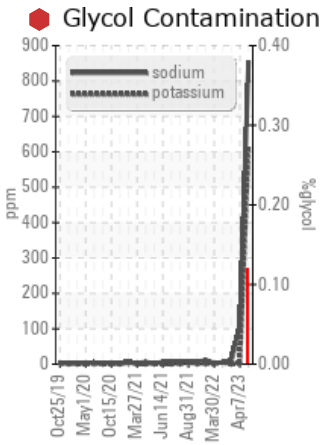
**Sample Rating Trend**

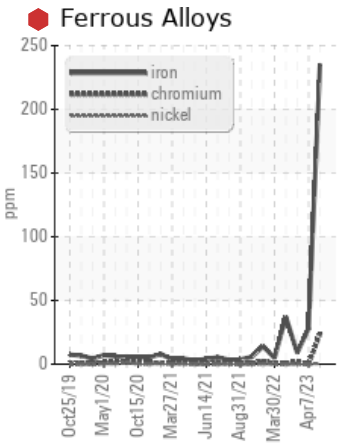


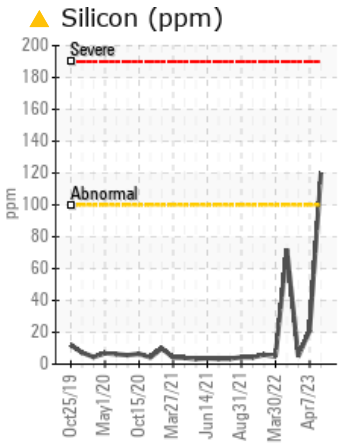
**GLYCOL**

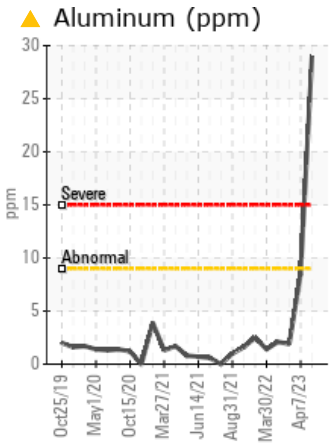
Machine Id
**2826c**
Component
**Natural Gas Engine**
Fluid
**CHEVRON DELO 400 NG (8 GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check for the source of the coolant leak. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | ABNORMAL | NORMAL |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **235** | 28 | 9 |
| Chromium | ppm | ASTM D5185m | >4 | **24** | 0 | 2 |
| Aluminum | ppm | ASTM D5185m | >9 | **29** | 8 | 2 |
| Silicon | ppm | ASTM D5185m | >+100 | **120** | 21 | 5 |
| Sodium | ppm | ASTM D5185m | | **855** | 106 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | **617** | 3 | 0 |
| Glycol | % | *ASTM D2982 | | **0.12** | 0.0 | --- |

**Customer Id:** GFL018
**Sample No.:** GFL0080573
**Lab Number:** 05904166
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Doug Bogart +1 (800)237-1369 x4016
dougb@wearcheckusa.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Inspect Wear Source | --- | --- | ? | We advise that you inspect for the source(s) of wear. |
| Change Fluid | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Change Filter | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Dirt Access | --- | --- | ? | We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. |
| Check Glycol Access | --- | --- | ? | We advise that you check for the source of the coolant leak. |

## HISTORICAL DIAGNOSIS

**07 Apr 2023 Diag: Jonathan Hester**

WATER

We advise that you check for possible coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please note that there was too much water present in the oil to perform a viscosity test.All component wear rates are normal. Sodium and/or potassium levels are high. There is a moderate concentration of water present in the oil. The oil viscosity is lower than normal. Additive levels indicate the addition of a different brand, or type of oil.

view report

**22 Jul 2022 Diag: Don Baldridge**

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

**10 Jun 2022 Diag: Wes Davis**

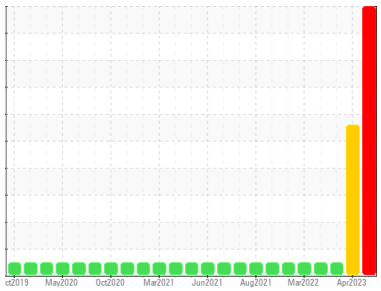
NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend




**GLYCOL**

Machine Id
**2826c**
Component
**Natural Gas Engine**
Fluid
**CHEVRON DELO 400 NG (8 GAL)**

## DIAGNOSIS

**Recommendation**

We advise that you check for the source of the coolant leak. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

**Wear**

Piston, ring and cylinder wear is indicated.

**Contamination**

Sodium and/or potassium levels are high. Test for glycol is positive. Elemental level of silicon (Si) above normal indicating ingress of dirt/seal material.

**Fluid Condition**

The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants and wear.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0080573** | GFL0074419 | GFL0050291 |
| Sample Date | | Client Info | | **20 Jul 2023** | 07 Apr 2023 | 22 Jul 2022 |
| Machine Age | hrs | Client Info | | **22469** | 22469 | 22469 |
| Oil Age | hrs | Client Info | | **22469** | 22469 | 420 |
| Oil Changed | | Client Info | | **Changed** | Changed | Not Changd |
| Sample Status | | | | **SEVERE** | ABNORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | ● **235** | 28 | 9 |
| Chromium | ppm | ASTM D5185m | >4 | ● **24** | 0 | 2 |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **2** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **<1** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >9 | ▲ **29** | 8 | 2 |
| Lead | ppm | ASTM D5185m | >30 | **22** | 15 | 5 |
| Copper | ppm | ASTM D5185m | >35 | **14** | 14 | 3 |
| Tin | ppm | ASTM D5185m | >4 | **2** | 1 | 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 | | **10** | 48 | 1 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **82** | ▲ 19 | 52 |
| Manganese | ppm | ASTM D5185m | | **3** | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | | **623** | ▲ 170 | 597 |
| Calcium | ppm | ASTM D5185m | | **1846** | ▲ 697 | 1659 |
| Phosphorus | ppm | ASTM D5185m | 800 | **812** | ▲ 393 | 720 |
| Zinc | ppm | ASTM D5185m | 880 | **1131** | ▲ 383 | 982 |
| Sulfur | ppm | ASTM D5185m | | **3547** | 2314 | 2821 |

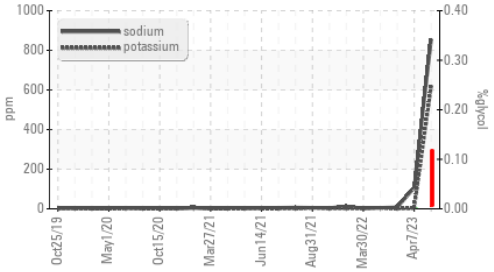
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >+100 | ▲ **120** | 21 | 5 |
| Sodium | ppm | ASTM D5185m | | ▲ **855** | ▲ 106 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **617** | 3 | 0 |
| Glycol | % | *ASTM D2982 | | ● **0.12** | 0.0 | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **13.8** | 9.0 | 13.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **28.2** | 24.1 | 27.9 |

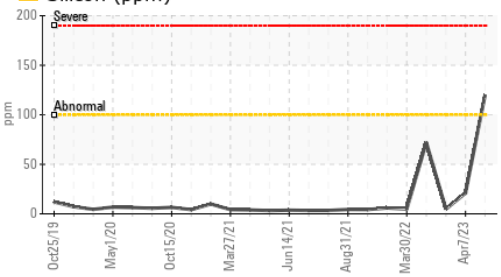
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **23.1** | 27.9 | 23.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 6.1 | **5.8** | 9.2 | 4.8 |

# OIL ANALYSIS REPORT

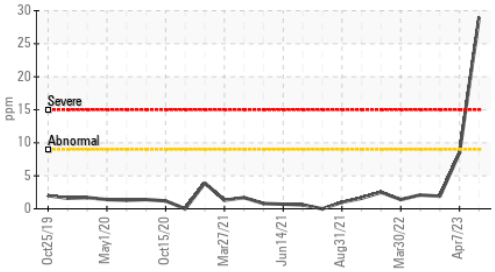
Glycol Contamination



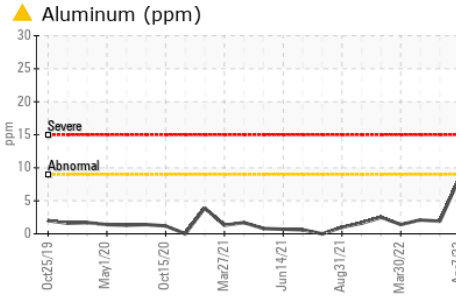

Silicon (ppm)



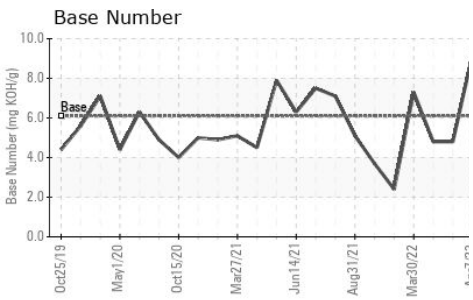

Aluminum (ppm)




Aluminum (ppm)




Base Number

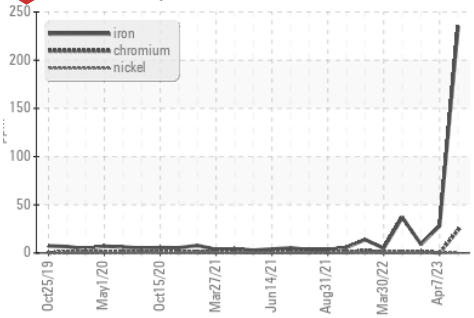



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | ▲ MODER | NONE |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Appearance | scalar | *Visual | NORML | **NORML** | LAYRD | NORML |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | **NEG** | 0.2% | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

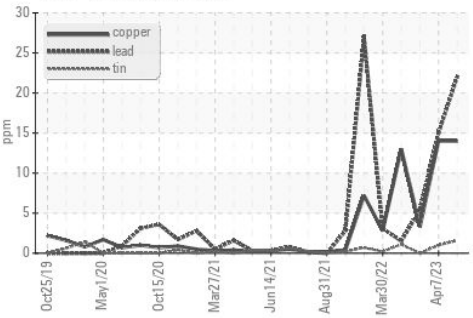
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.8 | **14.2** | ▲ 9.4 | 14.4 |

## GRAPHS

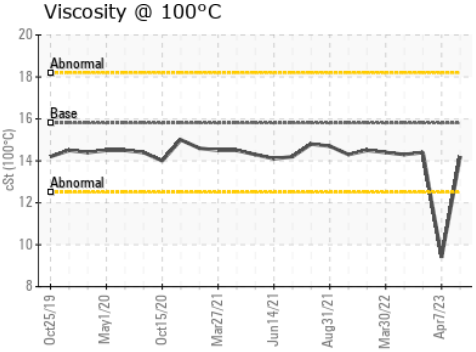
Ferrous Alloys



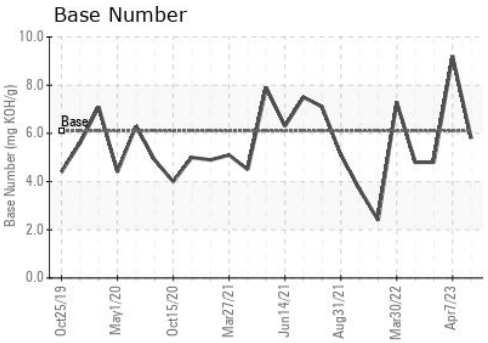

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0080573 **Received** : 21 Jul 2023
**Lab Number** : 05904166 **Diagnosed** : 01 Aug 2023
**Unique Number** : 10565522 **Diagnostician** : Doug Bogart
**Test Package** : FLEET ( Additional Tests: Glycol )

*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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