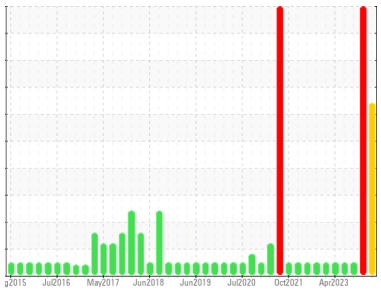
# OIL ANALYSIS REPORT

Sample Rating Trend



**GLYCOL**

Area
**(YA115787)**
Machine Id
**3493C**
Component
**Natural Gas Engine**
Fluid
**CHEVRON DELO 400 NG (30 GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend that you drain the oil and perform a filter service on this component if not already done. 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.

**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.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0123351** | GFL0123394 | GFL0082477 |
| Sample Date | | Client Info | | **27 Jun 2024** | 18 Jun 2024 | 18 Oct 2023 |
| Machine Age | mls | Client Info | | **116026** | 116026 | 116026 |
| Oil Age | mls | Client Info | | **116026** | 116026 | 116026 |
| Oil Changed | | Client Info | | **N/A** | N/A | Changed |
| Sample Status | | | | **ABNORMAL** | SEVERE | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.1 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | ▲ **89** | ▲ 81 | 15 |
| Chromium | ppm | ASTM D5185m | >4 | ▲ **11** | ▲ 10 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **2** | 2 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >9 | **9** | ▲ 7 | 3 |
| Lead | ppm | ASTM D5185m | >30 | **18** | ▲ 22 | <1 |
| Copper | ppm | ASTM D5185m | >35 | **2** | 2 | <1 |
| Tin | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **11** | 8 | 15 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **62** | 63 | 52 |
| Manganese | ppm | ASTM D5185m | | **1** | 2 | <1 |
| Magnesium | ppm | ASTM D5185m | | **569** | 641 | 562 |
| Calcium | ppm | ASTM D5185m | | **1694** | 1991 | 1665 |
| Phosphorus | ppm | ASTM D5185m | 800 | **818** | 914 | 764 |
| Zinc | ppm | ASTM D5185m | 880 | **1046** | 1191 | 997 |
| Sulfur | ppm | ASTM D5185m | | **2425** | 3366 | 2423 |

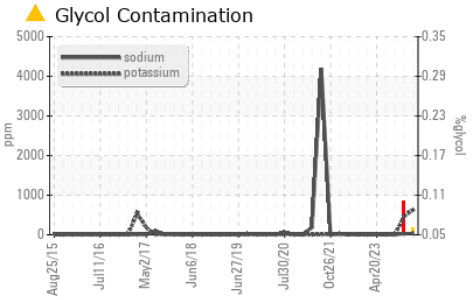
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >+100 | **16** | 14 | 7 |
| Sodium | ppm | ASTM D5185m | | ▲ **34** | ▲ 28 | 5 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **634** | ▲ 470 | 4 |
| Glycol | % | *ASTM D2982 | | ▲ **0.06** | ▲ 0.10 | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0** | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **11.6** | 11.4 | 8.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **24.8** | 24.9 | 18.8 |

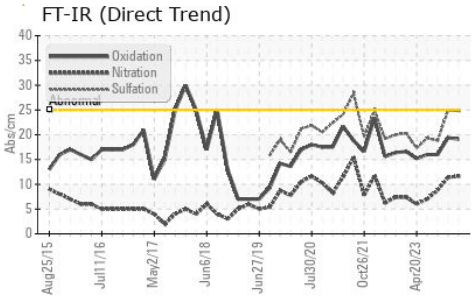
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **19.1** | 19.4 | 16.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 6.1 | **5.0** | 4.2 | 6.4 |

# OIL ANALYSIS REPORT

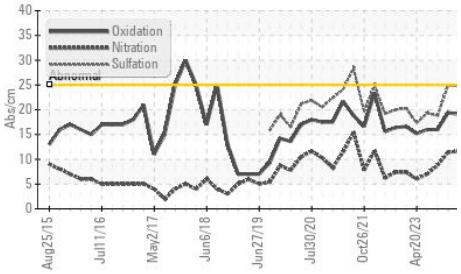
Glycol Contamination



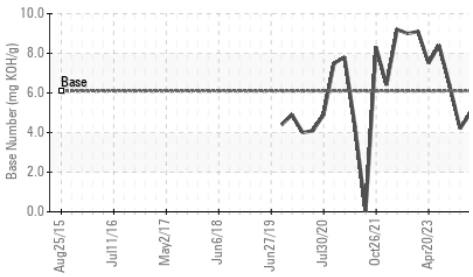

FT-IR (Direct Trend)



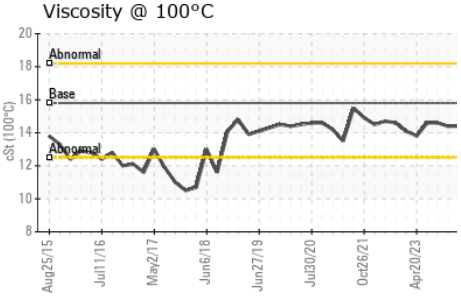

FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

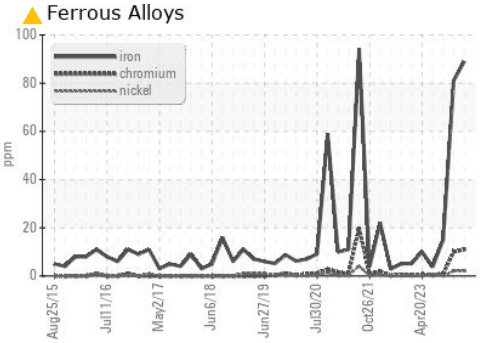



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | >0.1 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

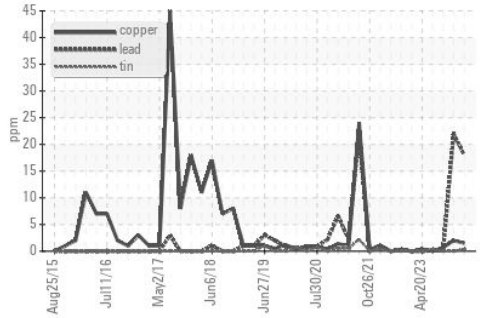
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.8 | **14.4** | 14.4 | 14.6 |

## GRAPHS

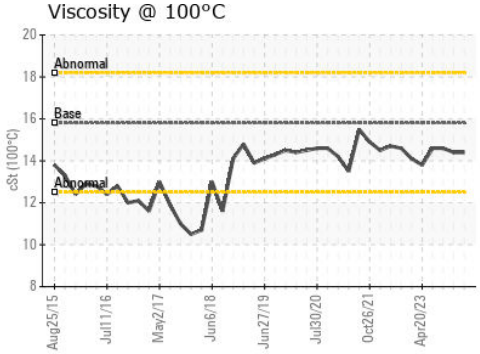
Ferrous Alloys



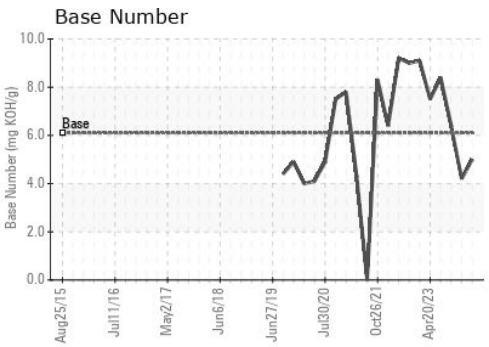

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0123351
**Lab Number** : 06227111
**Unique Number** : 11110604
**Test Package** : FLEET

**Received** : 03 Jul 2024
**Tested** : 05 Jul 2024
**Diagnosed** : 06 Jul 2024 - Don Baldridge

*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)*

**GFL Environmental - 007 - Brunswick**
2809 Galloway Road
Bolivia, NC
US 28422
Contact: DONALD CRAVEN
dcraven@gflenv.com
T:
F: (910)253-4179