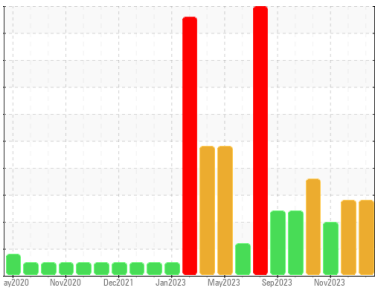
# OIL ANALYSIS REPORT

Sample Rating Trend



**FUEL**

Machine Id
**820018-101303**
Component
**Diesel Engine**
Fluid
**CHEVRON DELO 400 MULTIGRADE 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
Light fuel dilution occurring.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0102977** | GFL0086414 | GFL0086394 |
| Sample Date | | Client Info | | **15 Jan 2024** | 19 Dec 2023 | 19 Nov 2023 |
| Machine Age | hrs | Client Info | | **9474** | 9313 | 9108 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | SEVERE | ATTENTION |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **11** | 5 | 7 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | <1 | 1 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **1** | <1 | <1 |
| Tin | ppm | ASTM D5185m | >15 | **0** | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | ▲ **10** | 0 | ▲ 3 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **55** | 55 | 59 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | ▲ **862** | 876 | ▲ 893 |
| Calcium | ppm | ASTM D5185m | | ▲ **1075** | 929 | ▲ 1035 |
| Phosphorus | ppm | ASTM D5185m | 1360 | ▲ **1004** | 961 | 921 |
| Zinc | ppm | ASTM D5185m | 1480 | **1201** | 1129 | 1179 |
| Sulfur | ppm | ASTM D5185m | | **2977** | 2906 | 2823 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 3 | 3 |
| Sodium | ppm | ASTM D5185m | | **15** | 10 | 26 |
| Potassium | ppm | ASTM D5185m | >20 | **3** | 1 | 3 |
| Fuel | % | ASTM D3524 | >5 | ▲ **3.9** | ⬢ 9.9 | ▲ 4.8 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | 0.2 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.3** | 8.5 | 8.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **21.0** | 19.6 | 20.1 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **18.2** | 16.8 | 16.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 12.2 | **8.1** | 8.5 | 8.8 |

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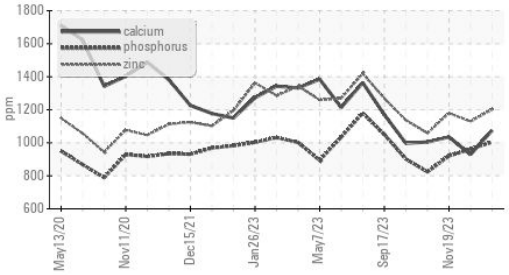
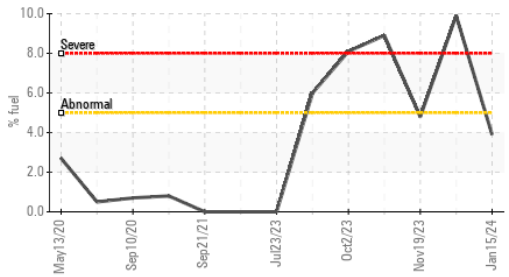
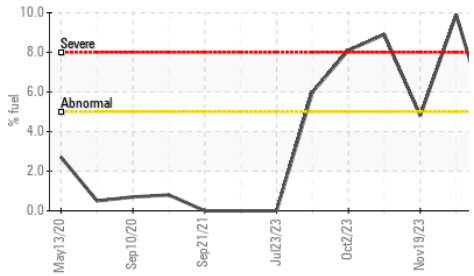
Additives



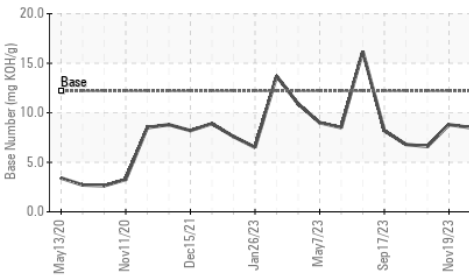

Fuel Dilution




Fuel Dilution




Base Number

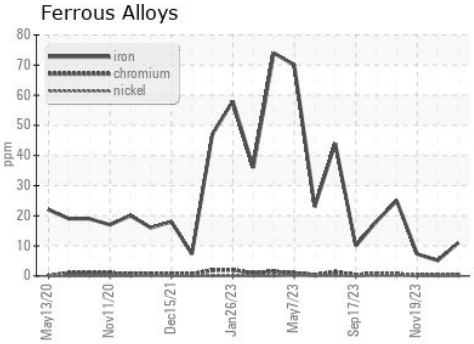



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

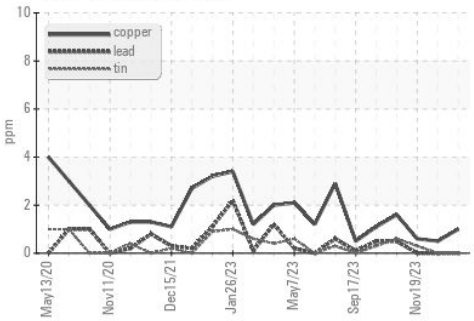
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.1 | ▲ **11.1** | ⬢ 9.7 | 13.1 |

## GRAPHS

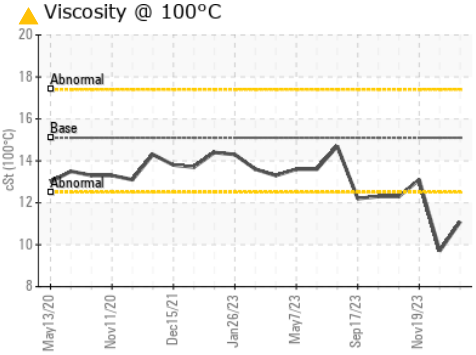
Ferrous Alloys



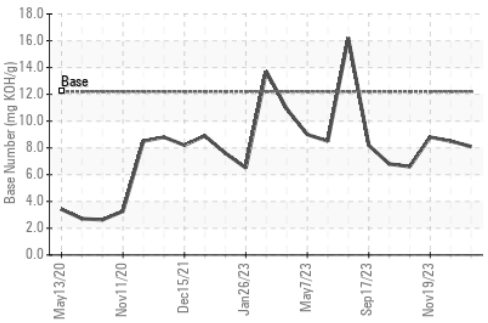

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0102977 **Recieved** : 16 Jan 2024
**Lab Number** : 06061661 **Diagnosed** : 18 Jan 2024
**Unique Number** : 10833043 **Diagnostician** : Wes Davis
**Test Package** : FLEET ( Additional Tests: PercentFuel )

*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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Report Id: GFL816 [WUSCAR] 06061661 (Generated: 01/18/2024 09:14:56) Rev: 1

Submitted By: Nicole Walls