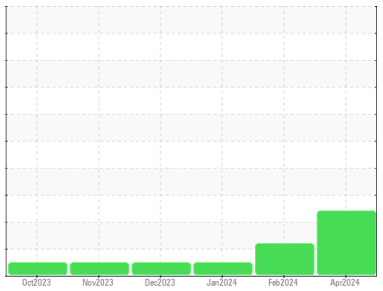
# OIL ANALYSIS REPORT

Sample Rating Trend




**GLYCOL**

Machine Id
**1004**
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check for possible coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

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

**Contamination**
Sodium and/or potassium levels remain high.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0897909** | WC0893975 | WC0894045 |
| Sample Date | | Client Info | | **10 Apr 2024** | 27 Feb 2024 | 23 Jan 2024 |
| Machine Age | mls | Client Info | | **0** | 0 | 889284 |
| Oil Age | mls | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | ATTENTION | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >90 | **17** | 12 | 14 |
| Chromium | ppm | ASTM D5185m | >20 | **2** | <1 | 1 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 0 | 1 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **1** | <1 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **0** | <1 | 1 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **4** | 1 | 6 |
| Barium | ppm | ASTM D5185m | 10 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **66** | 65 | 65 |
| Manganese | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **944** | 1117 | 1030 |
| Calcium | ppm | ASTM D5185m | 3000 | **1099** | 1198 | 1115 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1044** | 1133 | 1111 |
| Zinc | ppm | ASTM D5185m | 1350 | **1258** | 1365 | 1377 |
| Sulfur | ppm | ASTM D5185m | 4250 | **3327** | 3224 | 3076 |

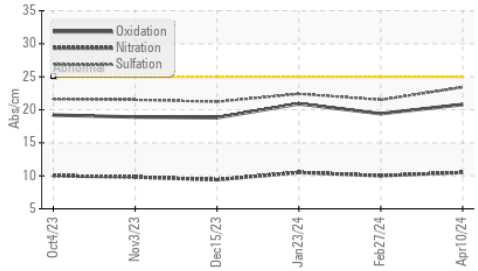
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **15** | 6 | 6 |
| Sodium | ppm | ASTM D5185m | >158 | ▲ **53** | 37 | 18 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **87** | 48 | 22 |
| Glycol | % | *ASTM D2982 | | **NEG** | NEG | NEG |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **1** | 0.6 | 0.7 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.5** | 10.0 | 10.5 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **23.4** | 21.5 | 22.4 |

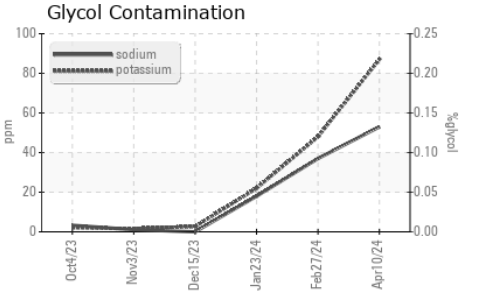
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **20.8** | 19.4 | 20.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **6.8** | 7.2 | 6.9 |

# OIL ANALYSIS REPORT

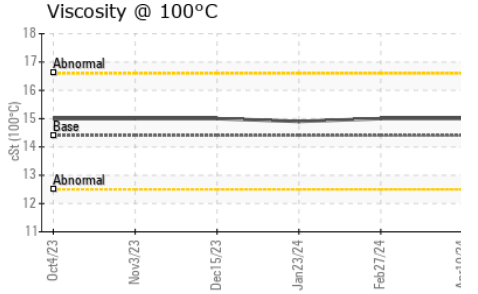
FT-IR (Direct Trend)



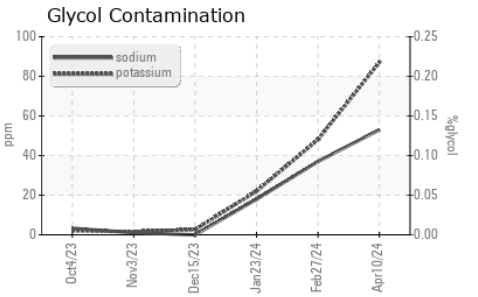

Glycol Contamination




Viscosity @ 100°C




Glycol Contamination

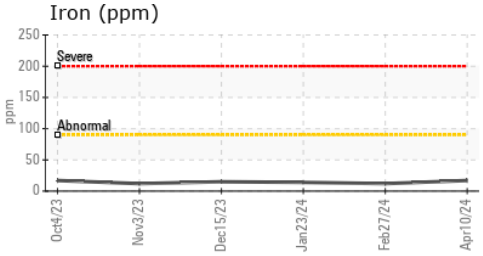



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

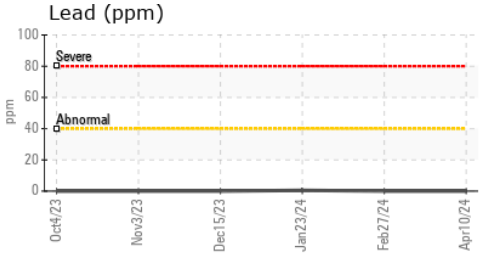
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **15.0** | 15.0 | 14.9 |

## GRAPHS

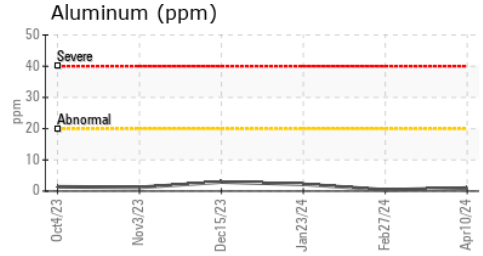
Iron (ppm)



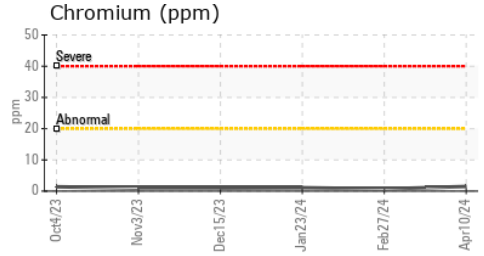

Lead (ppm)



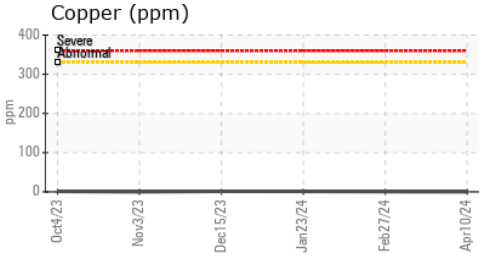

Aluminum (ppm)



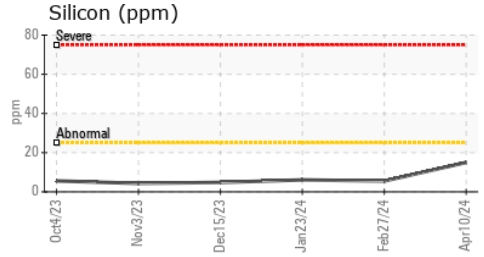

Chromium (ppm)



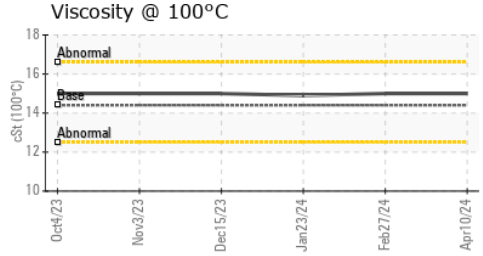

Copper (ppm)



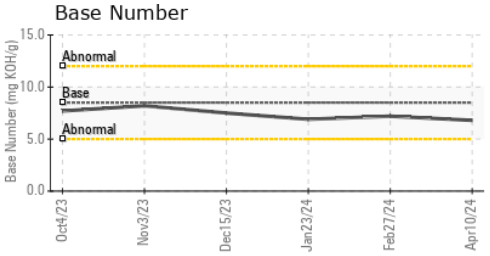

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0897909 **Received** : 17 Apr 2024
**Lab Number** : 06151523 **Tested** : 19 Apr 2024
**Unique Number** : 10981601 **Diagnosed** : 19 Apr 2024 - Jonathan Hester
**Test Package** : MOB 1 ( Additional Tests: Glycol, TBN )

*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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