MOB II WEAR CHECK

# OIL ANALYSIS REPORT

| | |
|---|---|
| WEAR | ABNORMAL |
| CONTAMINATION | SEVERE |
| FLUID CONDITION | ABNORMAL |

Machine Id
## CATERPILLAR 980G 126 (S/N 2KR02779)
Component
## Diesel Engine
Fluid
## SHELL 15W40 (9 GAL)

## RECOMMENDATION

We advise that you check for the source of the 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.

## WEAR

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

## CONTAMINATION

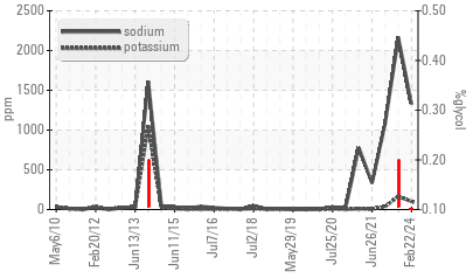
Sodium and/or potassium levels are high. Test for glycol is positive.

## FLUID CONDITION

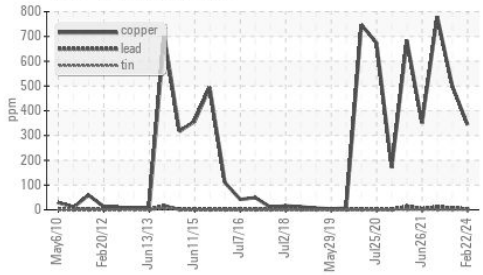
The BN result indicates that there is suitable alkalinity remaining in the oil.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | RW0005012 | RW0004405 | RW0003678 |
| Sample Date | | Client Info | | 22 Feb 2024 | 27 Mar 2023 | 01 Oct 2022 |
| Machine Age | hrs | Client Info | | 1156 | 24187 | 24145 |
| Oil Age | hrs | Client Info | | 472 | 289 | 295 |
| Filter Age | hrs | Client Info | | 472 | 289 | 295 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | SEVERE | SEVERE | ABNORMAL |
| Iron | ppm | ASTM D5185m | >80 | 38 | 41 | 30 |
| Chromium | ppm | ASTM D5185m | >4 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >10 | 1 | 2 | 2 |
| Lead | ppm | ASTM D5185m | >15 | 3 | 8 | 12 |
| Copper | ppm | ASTM D5185m | >230 | ▲ 344 | ▲ 498 | ▲ 780 |
| Tin | ppm | ASTM D5185m | >4 | 0 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >25 | 15 | 16 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ 102 | ▲ 166 | ▲ 37 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | % | *ASTM D2982 | | ▲ 0.10 | ▲ 0.20 | NEG |
| Soot % | % | *ASTM D7844 | >3 | 1.8 | 1.4 | 1.9 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 14.8 | 15.7 | 14.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 22.1 | 20.9 | 24.5 |
| 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 |
| Sodium | ppm | ASTM D5185m | >150 | ▲ 1328 | ▲ 2164 | ▲ 1085 |
| Boron | ppm | ASTM D5185m | | 31 | 2 | 8 |
| Barium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 217 | 285 | 182 |
| Manganese | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 888 | 782 | 402 |
| Calcium | ppm | ASTM D5185m | | 1126 | 1088 | 1659 |
| Phosphorus | ppm | ASTM D5185m | | 1083 | 954 | 1023 |
| Zinc | ppm | ASTM D5185m | | 1251 | 1160 | 1142 |
| Sulfur | ppm | ASTM D5185m | | 3743 | 3153 | 3853 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 14.5 | 15.1 | 17.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 11.45 | 15.31 | 11.4 |
| Visc @ 100°C | cSt | ASTM D445 | | 13.9 | 15.0 | 14.0 |

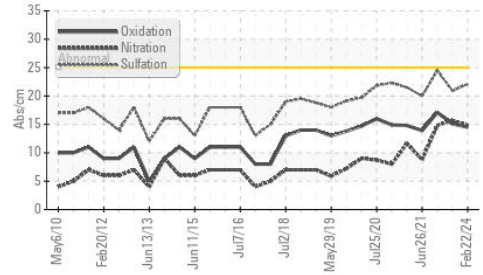
## Glycol Contamination



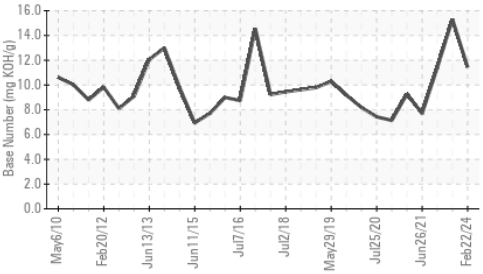

## Non-ferrous Metals



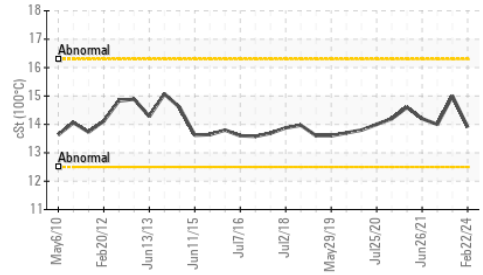

## FT-IR (Direct Trend)



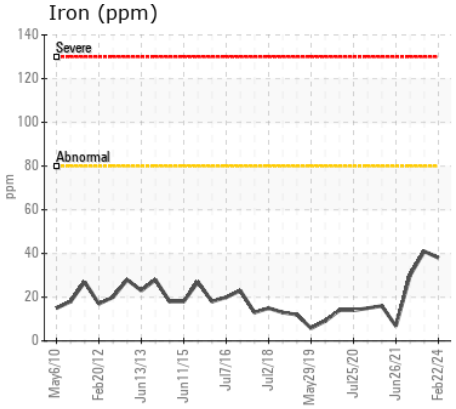

## Base Number



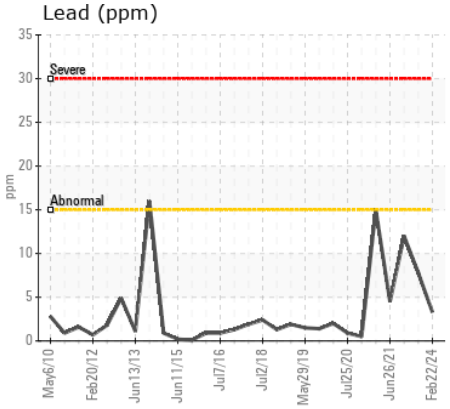

## Viscosity @ 100°C



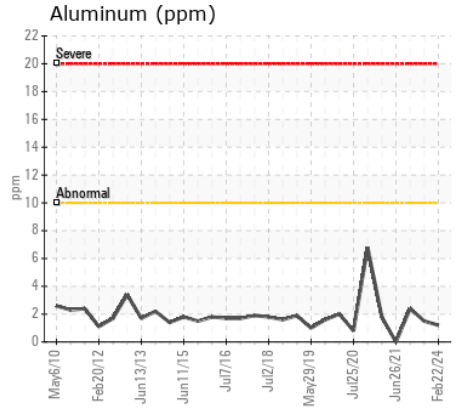

## Iron (ppm)



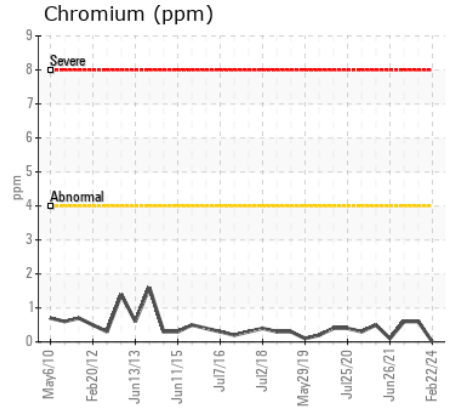

## Lead (ppm)



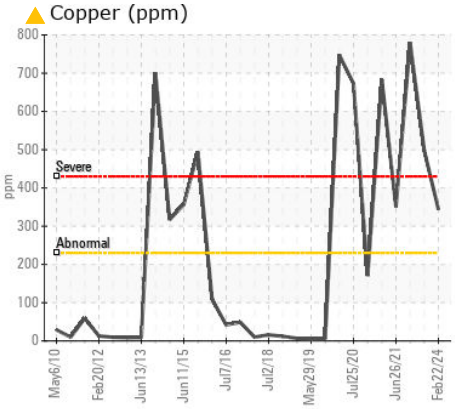

## Aluminum (ppm)



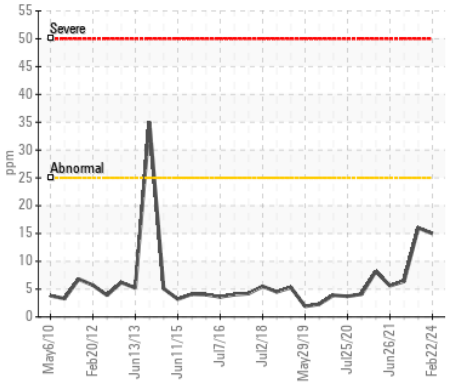

## Chromium (ppm)



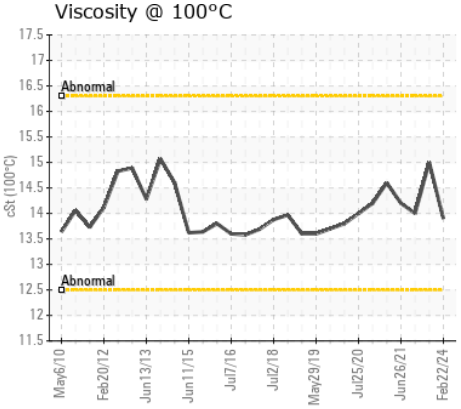

## Copper (ppm)



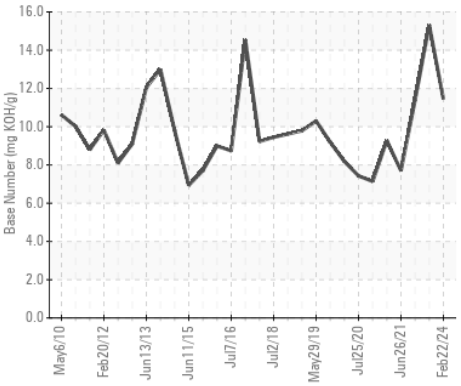

## Silicon (ppm)




## Viscosity @ 100°C




## Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : RW0005012
**Lab Number** : 06146737
**Unique Number** : 10976815
**Test Package** : MOB 2

**Received** : 11 Apr 2024
**Tested** : 16 Apr 2024
**Diagnosed** : 16 Apr 2024 - Jonathan Hester

*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)*

**HALLACK CONTRACTING, INC.**
4223 W POLK
HART, MI
US 49420
Contact: DAN HALLACK KARL BUTCHER
shop@hallackcontracting.com
T: (231)873-5081
F: (231)873-2889