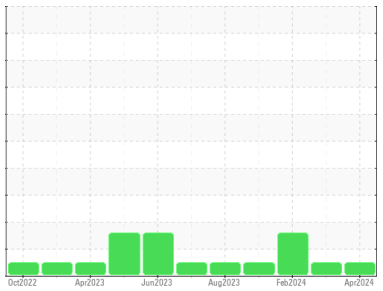
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## CATERPILLAR 980M 6141 (S/N KRS00885)
Component
**Rear Left Final Drive**
Fluid
**TULCO LUBSOIL TO-4 50 (3 GAL)**

## DIAGNOSIS

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

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

**Contamination**
There is no indication of any contamination in the oil.

**Fluid Condition**
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **TO10003322** | TO10003373 | TO10002967 |
| Sample Date | | Client Info | | **08 Apr 2024** | 04 Mar 2024 | 01 Feb 2024 |
| Machine Age | hrs | Client Info | | **13425** | 13158 | 12901 |
| Oil Age | hrs | Client Info | | **267** | 1685 | 1428 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | ABNORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184 | >500 | **60** | 422 | 471 |
| Iron | ppm | ASTM D5185m | >800 | **51** | 549 | ▲ 949 |
| Chromium | ppm | ASTM D5185m | >10 | **0** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >15 | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >75 | **<1** | 8 | 10 |
| Lead | ppm | ASTM D5185m | >10 | **0** | 3 | 0 |
| Copper | ppm | ASTM D5185m | >75 | **5** | 52 | ▲ 82 |
| Tin | ppm | ASTM D5185m | >8 | **0** | 1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | 0 |

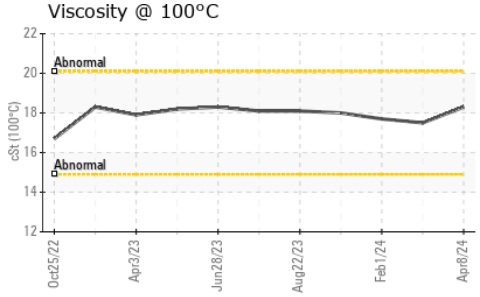
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **0** | <1 | 2 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 5 |
| Molybdenum | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Manganese | ppm | ASTM D5185m | | **<1** | 6 | 8 |
| Magnesium | ppm | ASTM D5185m | | **8** | 14 | 23 |
| Calcium | ppm | ASTM D5185m | | **2901** | 2752 | 4524 |
| Phosphorus | ppm | ASTM D5185m | | **817** | 881 | 1316 |
| Zinc | ppm | ASTM D5185m | | **1010** | 985 | 1739 |
| Sulfur | ppm | ASTM D5185m | | **4658** | 4903 | 7876 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >400 | **11** | 15 | 25 |
| Sodium | ppm | ASTM D5185m | | **6** | 5 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 3 | 3 |

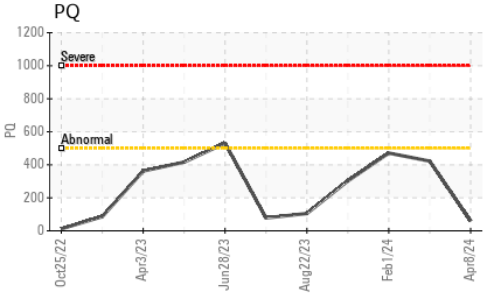
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **1.19** | 0.56 | 0.52 |

# OIL ANALYSIS REPORT

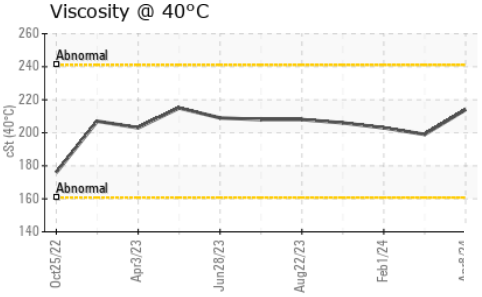
Viscosity @ 100°C



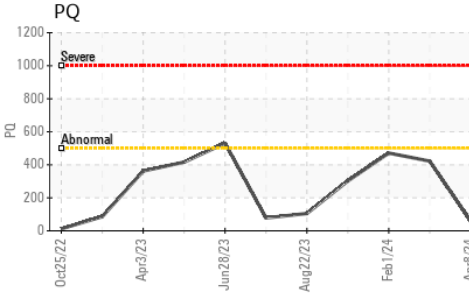

PQ




Viscosity @ 40°C




PQ



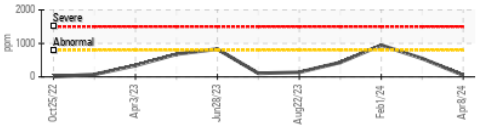

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | MODER | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 @ 40°C | cSt | ASTM D445 | | **214** | 199 | 203 |
| Visc @ 100°C | cSt | ASTM D445 | | **18.3** | 17.5 | 17.7 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | **94** | 94 | 94 |

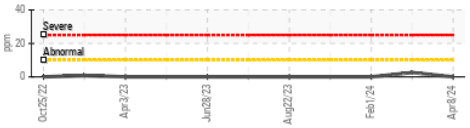
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | *no image* | *no image* | *no image* |
| Bottom | | | *no image* | *no image* | *no image* |

GRAPHS

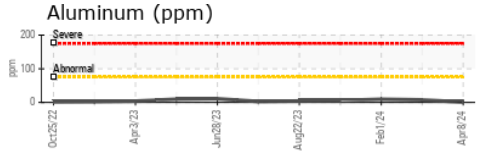
Iron (ppm)



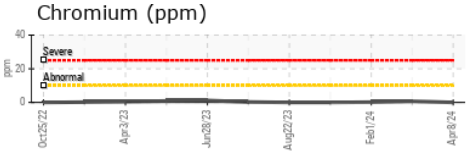

Lead (ppm)



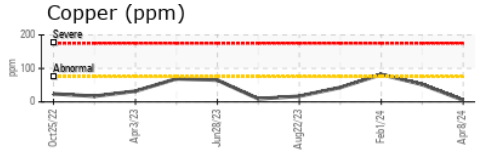

Aluminum (ppm)



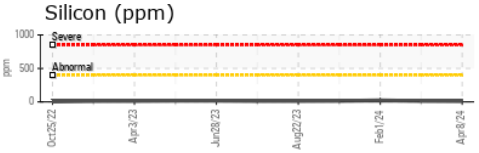

Chromium (ppm)



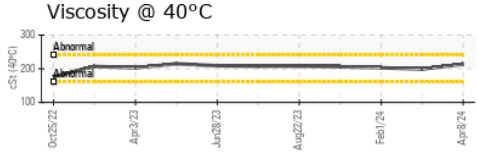

Copper (ppm)



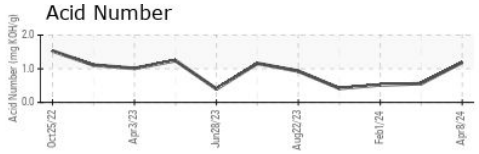

Silicon (ppm)




Viscosity @ 40°C




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : TO10003322 **Received** : 15 Apr 2024
**Lab Number** : 06149570 **Tested** : 16 Apr 2024
**Unique Number** : 10979648 **Diagnosed** : 16 Apr 2024 - Wes Davis
**Test Package** : MOB 2 ( Additional Tests: KV100, PQ, VI )

*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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Submitted By: SKIP SAENGERHAUSEN