



# OIL ANALYSIS REPORT

|                 |           |
|-----------------|-----------|
| WEAR            | NORMAL    |
| CONTAMINATION   | ATTENTION |
| FLUID CONDITION | NORMAL    |



Area  
**DE Samples - CAT LAB**  
Machine Id  
**CATERPILLAR 980K LOADER 6775 (S/N W7K01443)**  
Component  
**Hydraulic System**  
Fluid  
**TULCO LUBSOIL SUPER HYDRAULIC HZ 46 (--- GAL)**

## RECOMMENDATION

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>TO10003081</b>  | TO10003112  | TO10002811  |
| Sample Date    |     | Client Info |           | <b>04 May 2024</b> | 22 Feb 2024 | 04 Dec 2023 |
| Machine Age    | hrs | Client Info |           | <b>28486</b>       | 27973       | 27433       |
| Oil Age        | hrs | Client Info |           | <b>502</b>         | 5652        | 5112        |
| Filter Age     | hrs | Client Info |           | <b>502</b>         | 0           | 571         |
| Oil Changed    |     | Client Info |           | <b>Not Changed</b> | Not Changd  | Not Changed |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | Not Changed | Changed     |
| Sample Status  |     |             |           | <b>ATTENTION</b>   | NORMAL      | NORMAL      |

## WEAR

All component wear rates are normal.

|              |        |             |      |              |      |      |
|--------------|--------|-------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185m | >20  | <b>0</b>     | 0    | 0    |
| Chromium     | ppm    | ASTM D5185m | >10  | <b>0</b>     | 0    | 0    |
| Nickel       | ppm    | ASTM D5185m | >10  | <b>0</b>     | 0    | 0    |
| Titanium     | ppm    | ASTM D5185m |      | <b>0</b>     | 0    | 0    |
| Silver       | ppm    | ASTM D5185m |      | <b>0</b>     | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185m | >10  | <b>&lt;1</b> | 0    | 0    |
| Lead         | ppm    | ASTM D5185m | >10  | <b>0</b>     | 0    | 0    |
| Copper       | ppm    | ASTM D5185m | >75  | <b>0</b>     | <1   | 2    |
| Tin          | ppm    | ASTM D5185m | >10  | <b>0</b>     | 0    | 0    |
| Vanadium     | ppm    | ASTM D5185m |      | <b>0</b>     | 0    | 0    |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

## CONTAMINATION

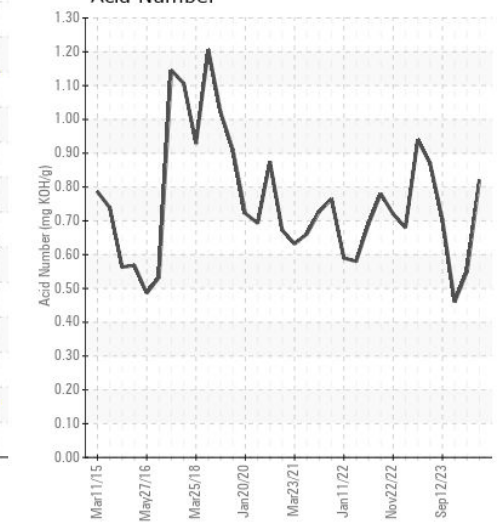
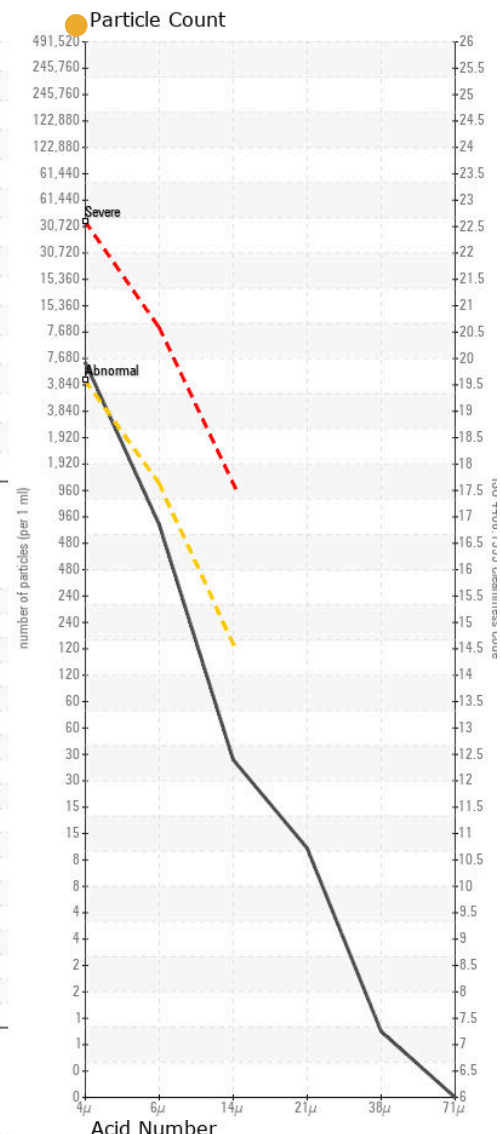
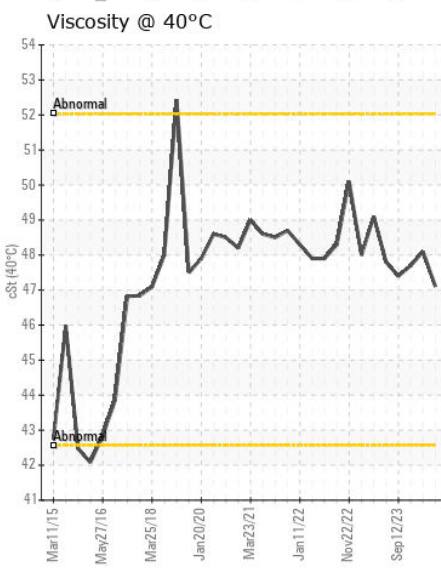
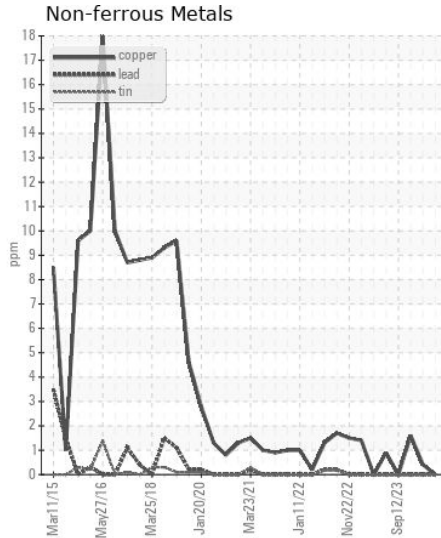
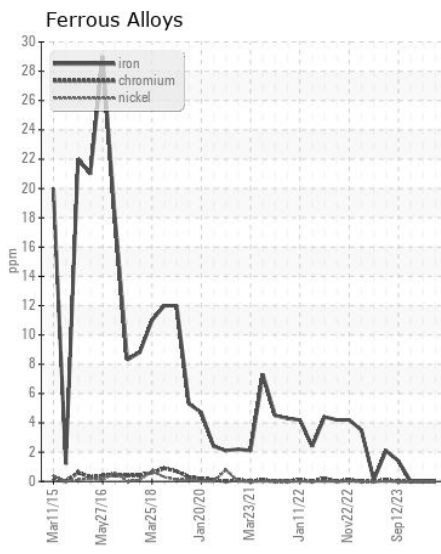
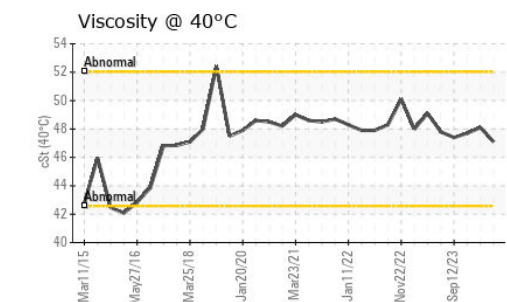
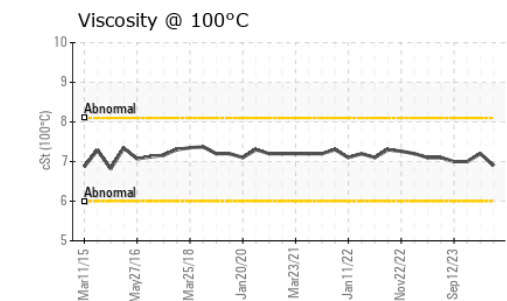
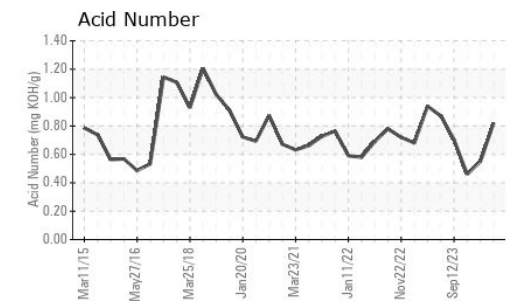
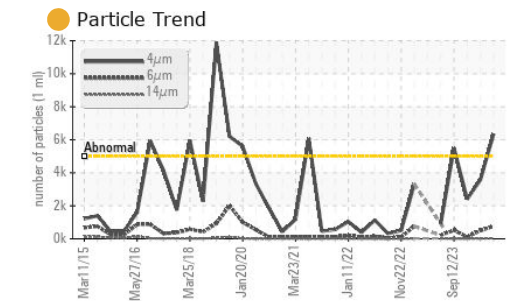
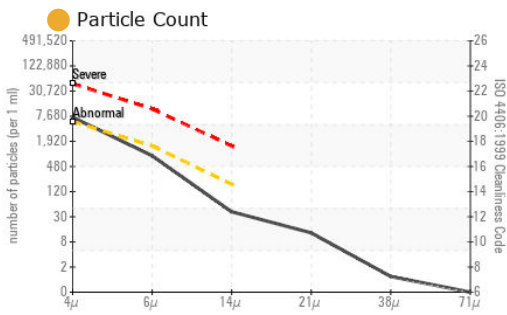
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

|                  |        |              |           |                 |          |          |
|------------------|--------|--------------|-----------|-----------------|----------|----------|
| Silicon          | ppm    | ASTM D5185m  | >20       | <b>1</b>        | 1        | <1       |
| Potassium        | ppm    | ASTM D5185m  | >20       | <b>1</b>        | <1       | 0        |
| Water            | %      | ASTM D6304   | >0.1      | <b>NEG</b>      | NEG      | NEG      |
| Particles >4µm   |        | ASTM D7647   | >5000     | <b>6345</b>     | 3575     | 2413     |
| Particles >6µm   |        | ASTM D7647   | >1300     | <b>760</b>      | 506      | 110      |
| Particles >14µm  |        | ASTM D7647   | >160      | <b>35</b>       | 19       | 12       |
| Particles >21µm  |        | ASTM D7647   | >40       | <b>11</b>       | 3        | 4        |
| Particles >38µm  |        | ASTM D7647   | >10       | <b>1</b>        | 0        | 0        |
| Particles >71µm  |        | ASTM D7647   | >3        | <b>0</b>        | 0        | 0        |
| Oil Cleanliness  |        | ISO 4406 (c) | >19/17/14 | <b>20/17/12</b> | 19/16/11 | 18/14/11 |
| Silt             | scalar | *Visual      | NONE      | <b>NONE</b>     | NONE     | NONE     |
| Debris           | scalar | *Visual      | NONE      | <b>NONE</b>     | NONE     | NONE     |
| Sand/Dirt        | scalar | *Visual      | NONE      | <b>NONE</b>     | NONE     | NONE     |
| Appearance       | scalar | *Visual      | NORML     | <b>NORML</b>    | NORML    | NORML    |
| Odor             | scalar | *Visual      | NORML     | <b>NORML</b>    | NORML    | NORML    |
| Emulsified Water | scalar | *Visual      | >0.1      | <b>NEG</b>      | NEG      | NEG      |

## FLUID CONDITION

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

|                      |          |             |  |             |      |      |
|----------------------|----------|-------------|--|-------------|------|------|
| Sodium               | ppm      | ASTM D5185m |  | <b>4</b>    | 4    | 4    |
| Boron                | ppm      | ASTM D5185m |  | <b>0</b>    | 0    | 0    |
| Barium               | ppm      | ASTM D5185m |  | <b>0</b>    | 0    | 0    |
| Molybdenum           | ppm      | ASTM D5185m |  | <b>0</b>    | 0    | 0    |
| Manganese            | ppm      | ASTM D5185m |  | <b>0</b>    | <1   | <1   |
| Magnesium            | ppm      | ASTM D5185m |  | <b>211</b>  | 213  | 209  |
| Calcium              | ppm      | ASTM D5185m |  | <b>196</b>  | 206  | 192  |
| Phosphorus           | ppm      | ASTM D5185m |  | <b>741</b>  | 748  | 722  |
| Zinc                 | ppm      | ASTM D5185m |  | <b>900</b>  | 931  | 897  |
| Sulfur               | ppm      | ASTM D5185m |  | <b>3272</b> | 2725 | 2728 |
| Acid Number (AN)     | mg KOH/g | ASTM D8045  |  | <b>0.82</b> | 0.55 | 0.46 |
| Visc @ 40°C          | cSt      | ASTM D445   |  | <b>47.1</b> | 48.1 | 47.7 |
| Visc @ 100°C         | cSt      | ASTM D445   |  | <b>6.9</b>  | 7.2  | 7    |
| Viscosity Index (VI) | Scale    | ASTM D2270  |  | <b>101</b>  | 108  | 103  |



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : TO10003081 **Received** : 10 May 2024  
**Lab Number** : **06176074** **Tested** : 14 May 2024  
**Unique Number** : 11022127 **Diagnosed** : 14 May 2024 - Don Baldrige  
**Test Package** : MOB 2 ( Additional Tests: KF, KV100, VI )

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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)