



OIL ANALYSIS REPORT

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



Area
RIG 5
Machine Id
CATERPILLAR 3512 R5-G-04 NKL
Component
Diesel Engine
Fluid
{not provided} (--- GAL)

RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|------|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | KL0013980 | KL0013089 | KL0012989 |
| Sample Date | | Client Info | | 12 Dec 2023 | 03 Nov 2023 | 29 Sep 2023 |
| Machine Age | days | Client Info | | 45272 | 45233 | 45196 |
| Oil Age | days | Client Info | | 0 | 0 | 0 |
| Filter Age | days | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | ATTENTION | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 4 | 0 | 3 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | 0 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | 2 | 4 | 6 |
| Lead | ppm | ASTM D5185m | >40 | 1 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | 1 | 0 | <1 |
| Tin | ppm | ASTM D5185m | >15 | <1 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

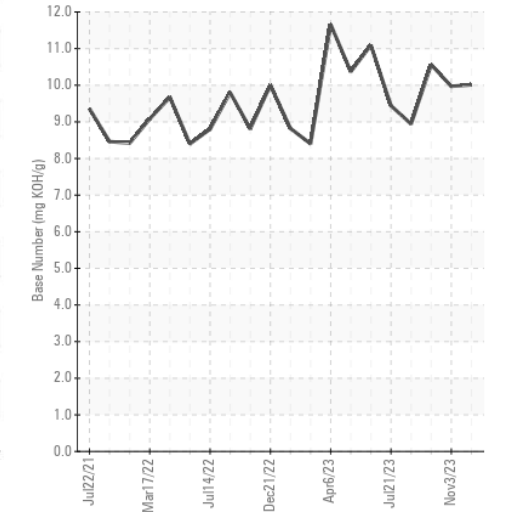
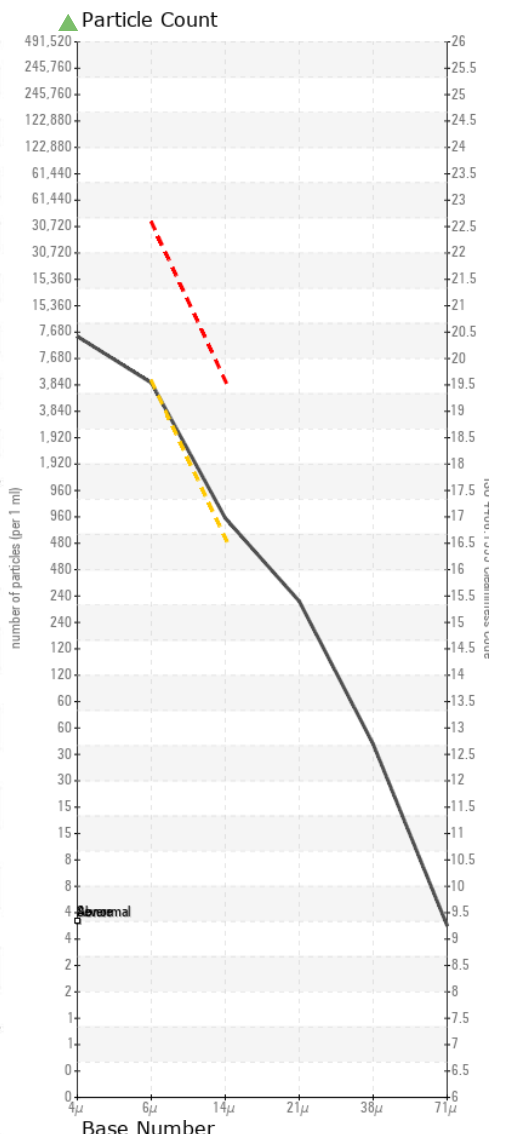
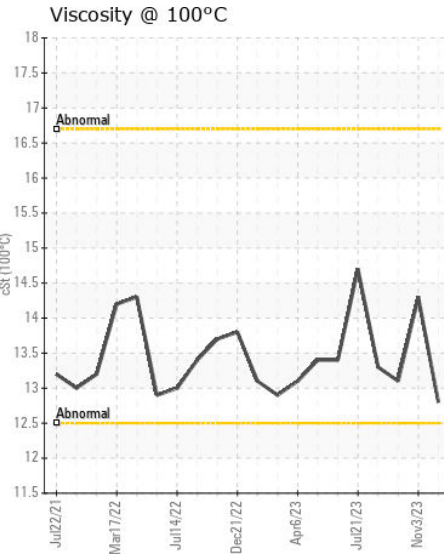
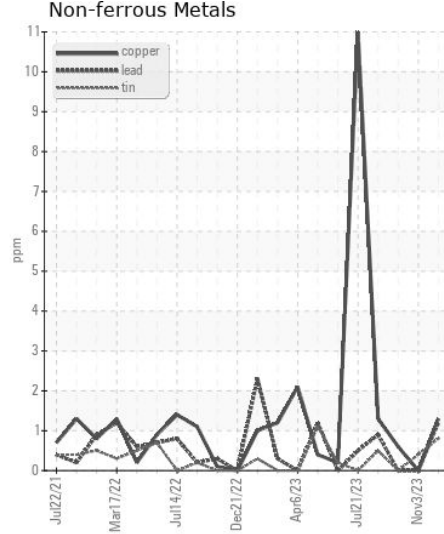
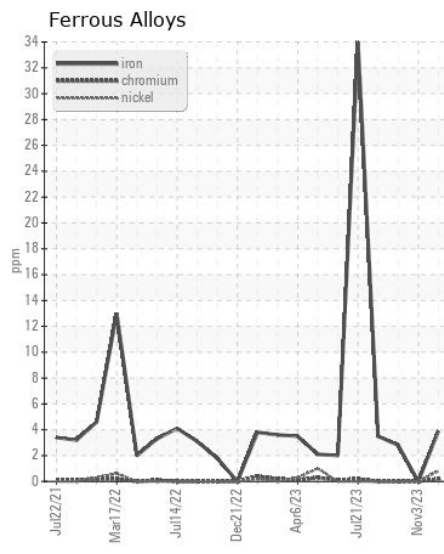
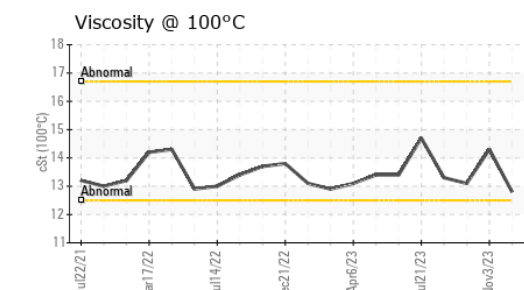
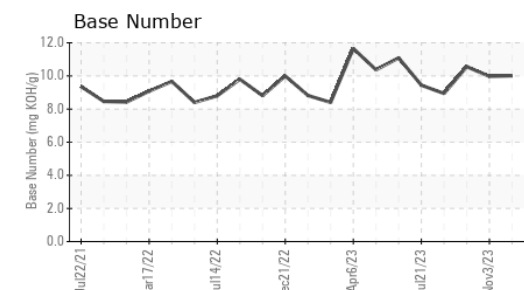
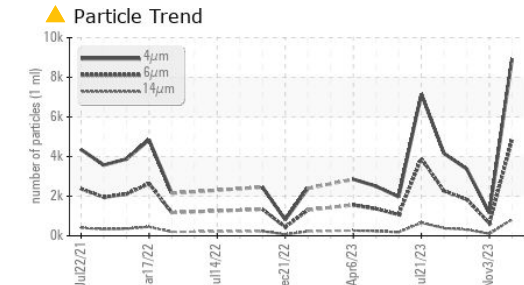
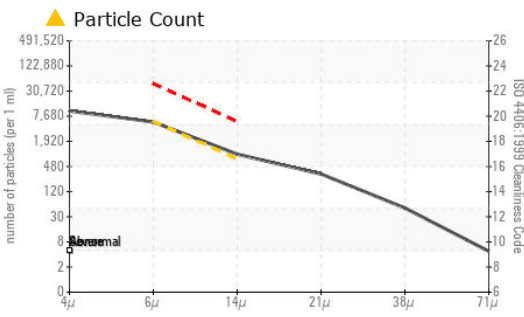
There is a moderate amount of particulates present in the oil.

| | | | | | | |
|------------------|----------|--------------|--------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >25 | 14 | 8 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | 2 | 0 | 1 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.1 | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.8 | 4.6 | 6.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 23.5 | 23.0 | 22.3 |
| Particles >4µm | | ASTM D7647 | | 8935 | 1157 | 3375 |
| Particles >6µm | | ASTM D7647 | >5000 | 4867 | 630 | 1839 |
| Particles >14µm | | ASTM D7647 | >640 | ▲ 828 | 107 | 313 |
| Particles >21µm | | ASTM D7647 | >160 | ▲ 279 | 36 | 105 |
| Particles >38µm | | ASTM D7647 | >40 | ▲ 43 | 6 | 16 |
| Particles >71µm | | ASTM D7647 | >10 | 4 | 1 | 2 |
| Oil Cleanliness | | ISO 4406 (c) | >19/16 | ▲ 19/17 | 16/14 | 18/15 |
| 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 |

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|-----|--------------|------|-------|
| Sodium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Boron | ppm | ASTM D5185m | | 356 | 369 | 321 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 130 | 122 | 121 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 704 | 701 | 616 |
| Calcium | ppm | ASTM D5185m | | 1586 | 1509 | 1387 |
| Phosphorus | ppm | ASTM D5185m | | 715 | 709 | 649 |
| Zinc | ppm | ASTM D5185m | | 871 | 867 | 780 |
| Sulfur | ppm | ASTM D5185m | | 2894 | 2566 | 2490 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 18.0 | 15.7 | 15.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 10.01 | 9.97 | 10.56 |
| Visc @ 100°C | cSt | ASTM D445 | | 12.8 | 14.3 | 13.1 |



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0013980 **Received** : 08 Jan 2024
Lab Number : 06055024 **Diagnosed** : 10 Jan 2024
Unique Number : 10820973 **Diagnostician** : Sean Felton
Test Package : MOB 2 (Additional Tests: PrtCount)

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Certificate L2367
 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)