

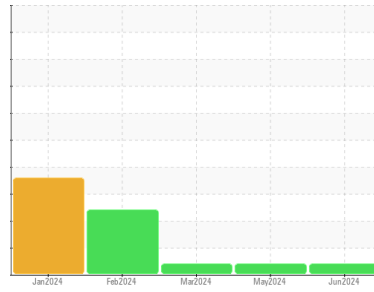


OIL ANALYSIS REPORT



Area
MINING
Machine Id
ME-61 CATERPILLAR 980M MK700210
Component
Diesel Engine
Fluid
CAT DEO ULS 15W40 (10 GAL)

Sample Rating Trend



VISCOSITY



DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. 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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | WC0950843 | WC0910934 | WC0909672 |
| Sample Date | Client Info | | 04 Jun 2024 | 01 May 2024 | 28 Mar 2024 |
| Machine Age | hrs | Client Info | 12200 | 11790 | 11312 |
| Oil Age | hrs | Client Info | 500 | 500 | 500 |
| Oil Changed | Client Info | | Changed | Changed | Changed |
| Sample Status | | | ATTENTION | ATTENTION | ATTENTION |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel | WC Method | >5 | <1.0 | 1.8 | <1.0 |
| Water | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | WC Method | | NEG | NEG | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >100 | 23 | 25 | 25 |
| Chromium | ppm | ASTM D5185m >20 | <1 | <1 | 1 |
| Nickel | ppm | ASTM D5185m >2 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185m >2 | <1 | <1 | <1 |
| Silver | ppm | ASTM D5185m >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >25 | 2 | 2 | 2 |
| Lead | ppm | ASTM D5185m >40 | <1 | 2 | 1 |
| Copper | ppm | ASTM D5185m >330 | 3 | 4 | 3 |
| Tin | ppm | ASTM D5185m >15 | <1 | 1 | <1 |
| Vanadium | ppm | ASTM D5185m | 0 | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | <1 | <1 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185m | 15 | 25 | 27 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 41 | 41 | 42 |
| Manganese | ppm | ASTM D5185m | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 443 | 445 | 440 |
| Calcium | ppm | ASTM D5185m | 1523 | 1625 | 1644 |
| Phosphorus | ppm | ASTM D5185m 1000 | 818 | 909 | 879 |
| Zinc | ppm | ASTM D5185m 1090 | 1045 | 1088 | 1052 |
| Sulfur | ppm | ASTM D5185m 3000 | 2950 | 3330 | 2976 |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|-----------------|-----------|----------|----------|
| Silicon | ppm | ASTM D5185m >25 | 7 | 6 | 9 |
| Sodium | ppm | ASTM D5185m | 25 | 19 | 29 |
| Potassium | ppm | ASTM D5185m >20 | 3 | 3 | 4 |

INFRA-RED

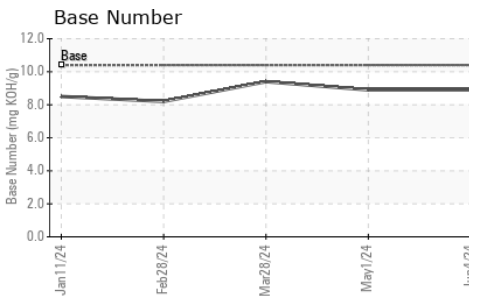
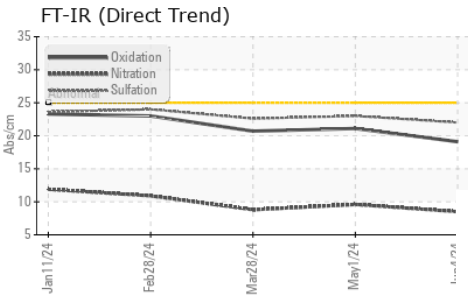
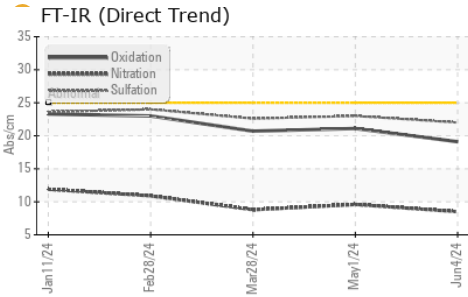
| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 >3 | 0.6 | 0.6 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 >20 | 8.5 | 9.6 | 8.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 22.0 | 23.0 | 22.6 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 19.1 | 21.1 | 20.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 10.4 | 8.9 | 8.9 | 9.4 |



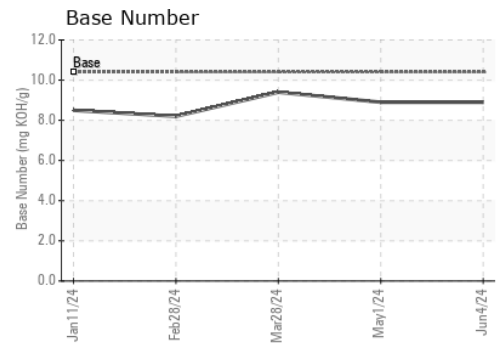
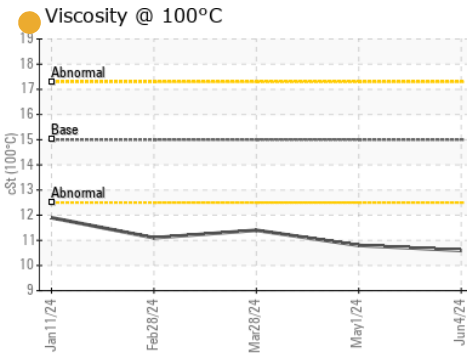
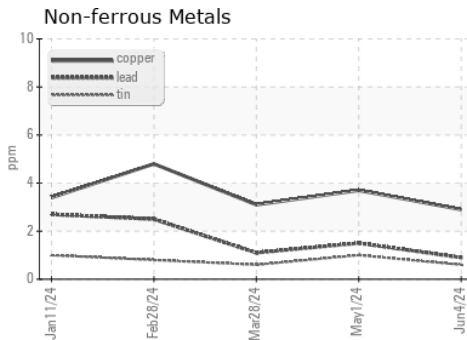
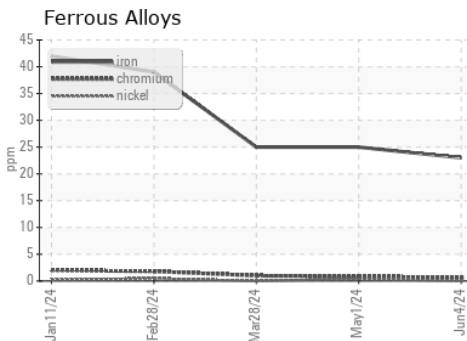
OIL ANALYSIS REPORT



| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|----------|----------|------|
| Visc @ 100°C | cSt | ASTM D445 | 15.0 | 10.6 | 10.8 | 11.4 |

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0950843 **Received** : 11 Jun 2024
Lab Number : 06206207 **Tested** : 13 Jun 2024
Unique Number : 11073668 **Diagnosed** : 13 Jun 2024 - Don Baldrige
Test Package : CONST (Additional Tests: TBN)

COVIA - CAMDEN - 094
 1700 SAND MILL RD
 CAMDEN, TN
 US 38320
 Contact: TRACY KEE
 tracy.kee@coviacorp.com

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)