

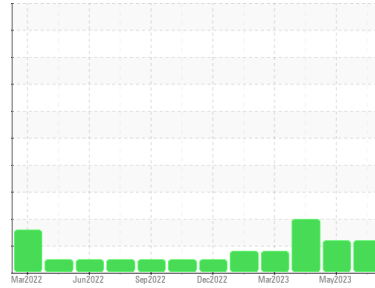


PROBLEM SUMMARY



Machine Id
CATERPILLAR C15 HOBBS GENERATOR
 Component
Diesel Engine
 Fluid
SHELL ROTELLA T 15W40 (--- GAL)

Sample Rating Trend

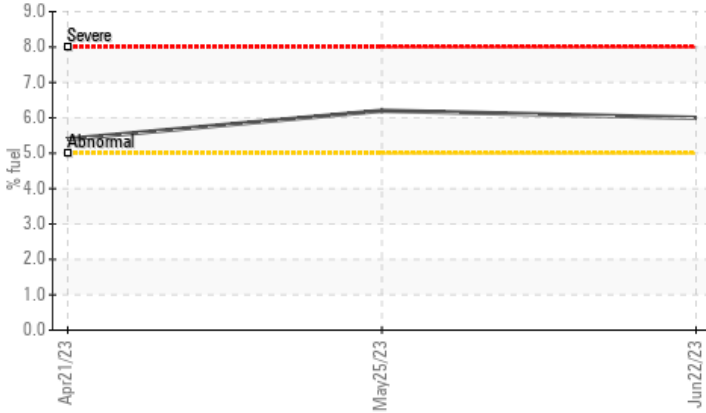


FUEL

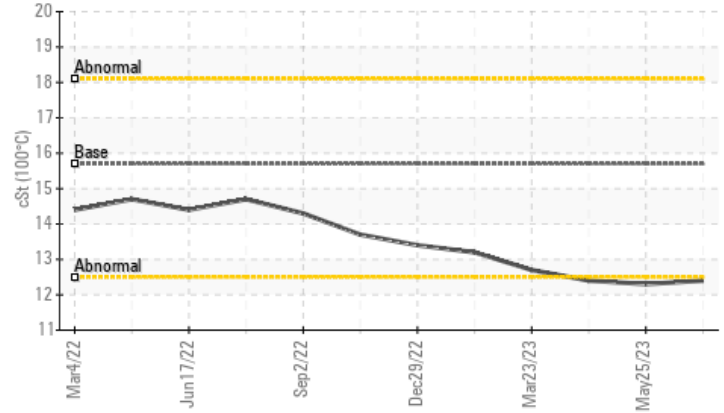


COMPONENT CONDITION SUMMARY

▲ Fuel Dilution



▲ Viscosity @ 100°C



RECOMMENDATION

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

| Sample Status | | | | ABNORMAL | ABNORMAL | ABNORMAL |
|---------------|-----|------------|------|-----------------|----------|----------|
| Fuel | % | ASTM D3524 | >5 | ▲ 6.0 | ▲ 6.2 | ▲ 5.4 |
| Visc @ 100°C | cSt | ASTM D445 | 15.7 | ▲ 12.4 | ▲ 12.3 | ▲ 12.4 |

Customer Id: RAMHOB
 Sample No.: KL0011667
 Lab Number: 05902733
 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Wes Davis +1 905-569-8600 x223
wesd@wearcheck.ca

To change component or sample information:
 Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|--------------|--------|------|---------|---|
| Change Fluid | --- | --- | ? | We recommend that you drain the oil from the component if this has not already been done. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |

HISTORICAL DIAGNOSIS

25 May 2023 Diag: Wes Davis

FUEL



We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a moderate amount of fuel present in the oil. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. Tests confirm the presence of fuel in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

[view report](#)



21 Apr 2023 Diag: Jonathan Hester

WEAR



We advise that you check the fuel injection system. Resample at the next service interval to monitor. 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). There is a moderate amount of fuel present in the oil. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

[view report](#)



23 Mar 2023 Diag: Doug Bogart

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. 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). All other component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

[view report](#)



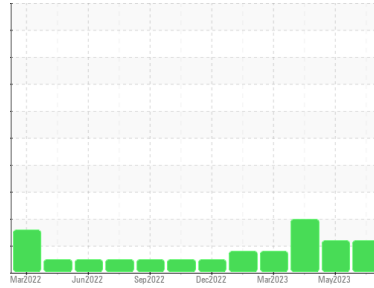


OIL ANALYSIS REPORT



Machine Id
CATERPILLAR C15 HOBBS GENERATOR
 Component
Diesel Engine
 Fluid
SHELL ROTELLA T 15W40 (--- GAL)

Sample Rating Trend



FUEL



DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | KL0011667 | KL0012433 | KL0011467 |
| Sample Date | Client Info | | 22 Jun 2023 | 25 May 2023 | 21 Apr 2023 |
| Machine Age | hrs | Client Info | 0 | 45069 | 0 |
| Oil Age | hrs | Client Info | 0 | 0 | 0 |
| Oil Changed | Client Info | | N/A | N/A | N/A |
| Sample Status | | | ABNORMAL | ABNORMAL | ABNORMAL |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|------------|----------|----------|
| Glycol | WC Method | | NEG | 0.0 | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >100 | 10 | 9 | 8 |
| Chromium | ppm | ASTM D5185m >6 | 0 | <1 | 0 |
| Nickel | ppm | ASTM D5185m >4 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m >2 | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >30 | 4 | <1 | 5 |
| Lead | ppm | ASTM D5185m >10 | 8 | 8 | 11 |
| Copper | ppm | ASTM D5185m >150 | 362 | 374 | ▲ 443 |
| Tin | ppm | ASTM D5185m >4 | <1 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | 0 | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185m 316 | 293 | 270 | 282 |
| Barium | ppm | ASTM D5185m 0.0 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m 1.2 | 97 | 96 | 103 |
| Manganese | ppm | ASTM D5185m | <1 | <1 | 0 |
| Magnesium | ppm | ASTM D5185m 24 | 435 | 497 | 532 |
| Calcium | ppm | ASTM D5185m 2292 | 1722 | 1846 | 1888 |
| Phosphorus | ppm | ASTM D5185m 1064 | 858 | 901 | 945 |
| Zinc | ppm | ASTM D5185m 1160 | 1064 | 1135 | 1183 |
| Sulfur | ppm | ASTM D5185m 4996 | 2868 | 3631 | 3656 |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|-----------------|--------------|----------|----------|
| Silicon | ppm | ASTM D5185m >20 | 5 | 5 | 4 |
| Sodium | ppm | ASTM D5185m | 0 | 1 | 1 |
| Potassium | ppm | ASTM D5185m >20 | 3 | 2 | 2 |
| Fuel | % | ASTM D3524 >5 | ▲ 6.0 | ▲ 6.2 | ▲ 5.4 |

INFRA-RED

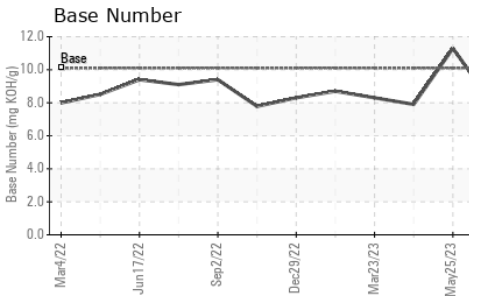
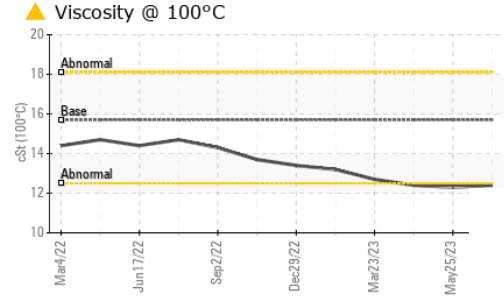
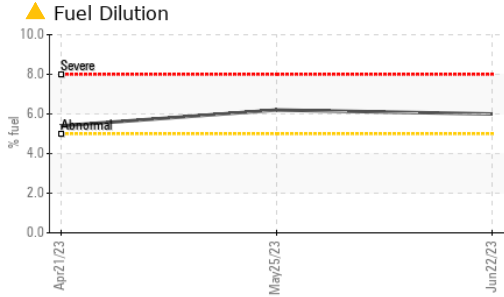
| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 >3 | 0.1 | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 >20 | 10.0 | 10.3 | 9.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 23.8 | 23.9 | 24.2 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 22.4 | 22.1 | 22.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 10.1 | 8.0 | 11.29 | 7.9 |



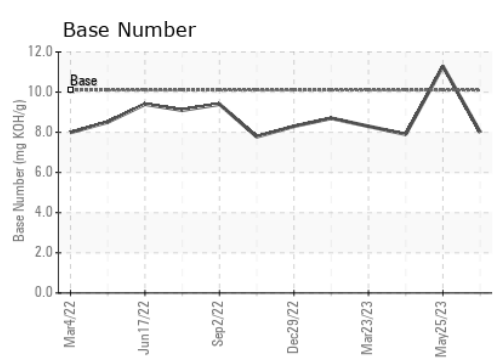
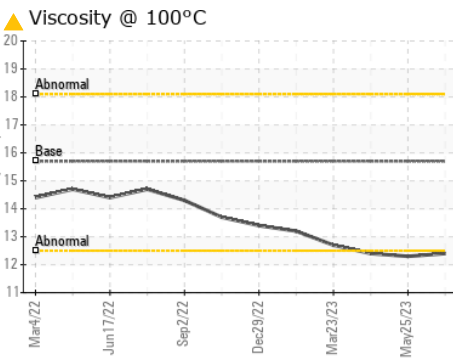
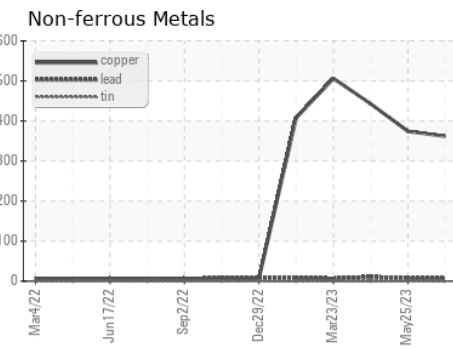
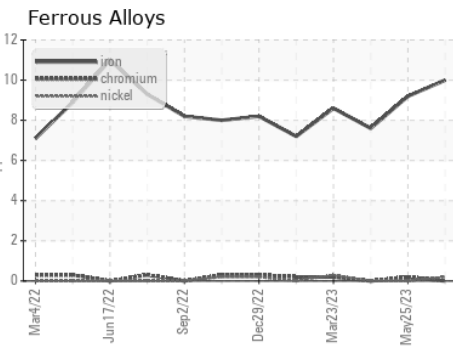
OIL ANALYSIS REPORT



| 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 | ▲ 12.4 | ▲ 12.3 | ▲ 12.4 |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0011667 **Received** : 19 Jul 2023
Lab Number : 05902733 **Diagnosed** : 21 Jul 2023
Unique Number : 10564089 **Diagnostician** : Wes Davis
Test Package : FLEET (Additional Tests: PercentFuel)

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 HOBBS, NM
 US 88240
 Contact: Rick Davidson
 rickdavidson.rs@gmail.com
 T:
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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)