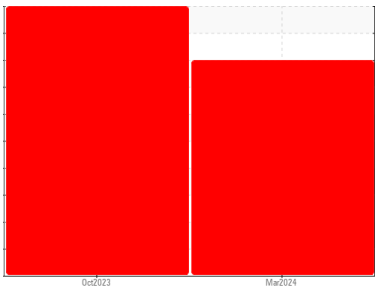
# OIL ANALYSIS REPORT

Sample Rating Trend




DIRT

Machine Id
## CATERPILLAR 324D EXC-03
Component
**Right Final Drive**
Fluid
**{not provided} (--- GAL)**

## DIAGNOSIS

**▲ Recommendation**

We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please specify the brand, type, and viscosity of the oil on your next sample.

**▲ Wear**

Silver and iron and titanium ppm levels are abnormal. Aluminum ppm levels are noted. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion.

**▲ Contamination**

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. High amount of ingressed dirt has caused abrasive wear to the component.

**Fluid Condition**

The oil is no longer serviceable as a result of the abnormal and/or severe wear.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0916303** | WC0865544 | --- |
| Sample Date | | Client Info | | **11 Mar 2024** | 29 Oct 2023 | --- |
| Machine Age | hrs | Client Info | | **7315** | 7074 | --- |
| Oil Age | hrs | Client Info | | **0** | 0 | --- |
| Oil Changed | | Client Info | | **Changed** | Changed | --- |
| Sample Status | | | | **SEVERE** | SEVERE | --- |

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

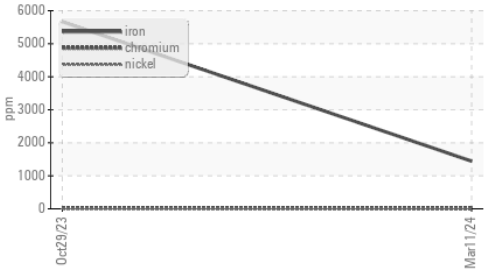
| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | >500 | **428** | ▲ 1057 | --- |
| Iron | ppm | ASTM D5185(m) | >800 | ▲ **1443** | ▲ 5668 | --- |
| Chromium | ppm | ASTM D5185(m) | >10 | **6** | ▲ 23 | --- |
| Nickel | ppm | ASTM D5185(m) | >5 | **2** | 4 | --- |
| Titanium | ppm | ASTM D5185(m) | >15 | ▲ **17** | 51 | --- |
| Silver | ppm | ASTM D5185(m) | >2 | ▲ **3** | 2 | --- |
| Aluminum | ppm | ASTM D5185(m) | >75 | ● **307** | ● 1188 | --- |
| Lead | ppm | ASTM D5185(m) | >10 | **2** | 5 | --- |
| Copper | ppm | ASTM D5185(m) | >75 | **4** | 9 | --- |
| Tin | ppm | ASTM D5185(m) | >8 | **0** | 0 | --- |
| Antimony | ppm | ASTM D5185(m) | >50 | **0** | 0 | --- |
| Vanadium | ppm | ASTM D5185(m) | | **<1** | 3 | --- |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | --- |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | | **5** | 17 | --- |
| Barium | ppm | ASTM D5185(m) | | **4** | 14 | --- |
| Molybdenum | ppm | ASTM D5185(m) | | **<1** | 4 | --- |
| Manganese | ppm | ASTM D5185(m) | | **15** | 61 | --- |
| Magnesium | ppm | ASTM D5185(m) | | **150** | 596 | --- |
| Calcium | ppm | ASTM D5185(m) | | **3784** | 4959 | --- |
| Phosphorus | ppm | ASTM D5185(m) | | **939** | 894 | --- |
| Zinc | ppm | ASTM D5185(m) | | **1050** | 979 | --- |
| Sulfur | ppm | ASTM D5185(m) | | **7316** | 5076 | --- |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | --- |

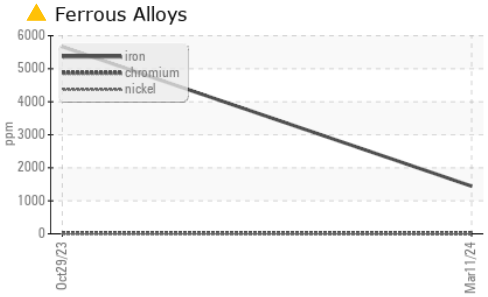
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >400 | ▲ **1222** | ▲ 4359 | --- |
| Sodium | ppm | ASTM D5185(m) | | **114** | 426 | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | **82** | 300 | --- |

# OIL ANALYSIS REPORT

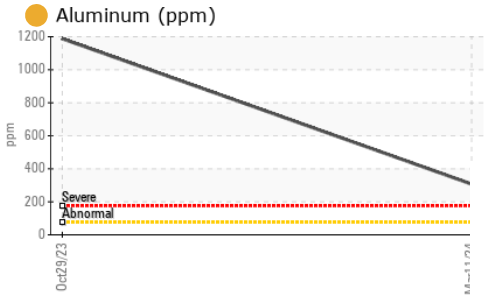
Ferrous Alloys



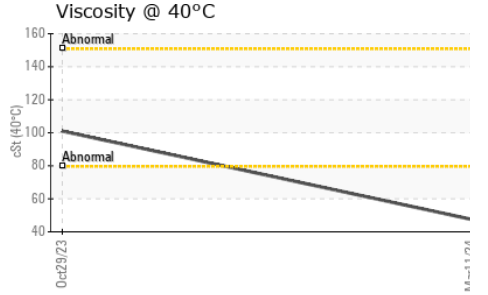

Ferrous Alloys



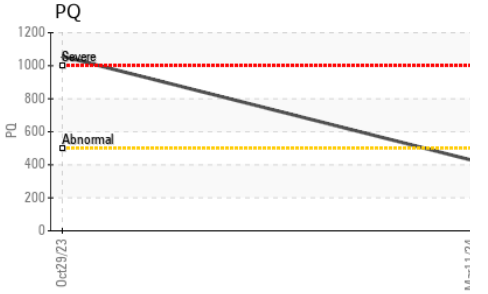

Aluminum (ppm)




Viscosity @ 40°C

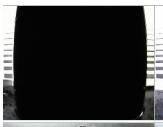
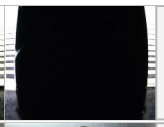



PQ



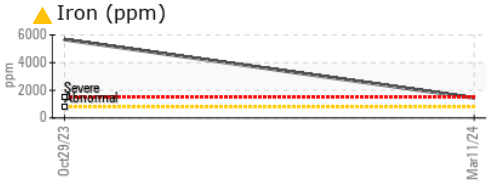

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | Visual* | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | Visual* | NONE | **NONE** | NONE | --- |
| Silt | 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** | ▲ .2% | --- |
| Free Water | scalar | Visual* | | **NEG** | NEG | --- |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | | **47.5** | ▲ 101 | --- |

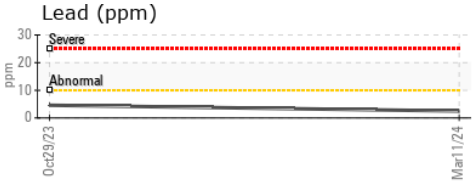
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  |  | *no image* |
| Bottom | | |  |  | *no image* |

## GRAPHS

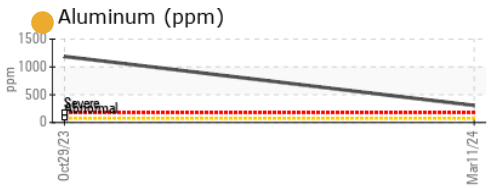
Iron (ppm)



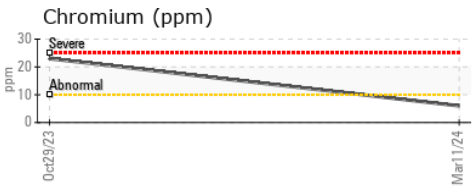

Lead (ppm)



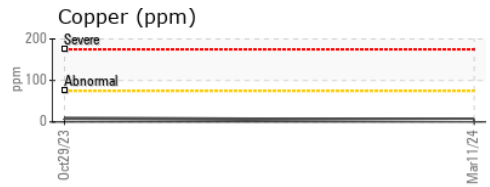

Aluminum (ppm)



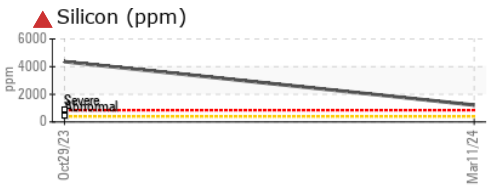

Chromium (ppm)



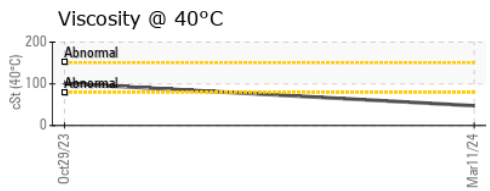

Copper (ppm)



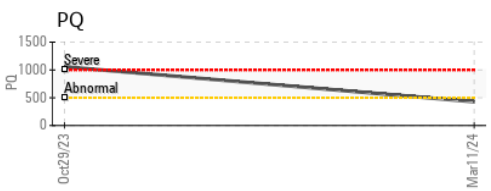

Silicon (ppm)




Viscosity @ 40°C




PQ




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0916303 **Received** : 18 Mar 2024
**Lab Number** : 02622788 **Tested** : 18 Mar 2024
**Unique Number** : 5747907 **Diagnosed** : 19 Mar 2024 - Kevin Marson
**Test Package** : MOB 1 ( Additional Tests: PQ )

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*

**Agnico Eagle Canada**
1350 Government Rd. W, MACASSA COMPLEX
Kirkland Lake, ON
CA P2N 3J1
Contact: Mitch Lamontagne
AEM_KL_macassaoilsampleresults@agnicoeagle.com
T: (705)567-5208
F: (705)567-5221