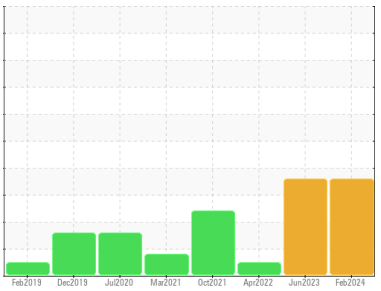
# OIL ANALYSIS REPORT

Sample Rating Trend




**DIRT**

Area
**METRO**
Machine Id
**METRO 20011**
Component
**Front Differential**
Fluid
**{not provided} (--- GAL)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. Resample at the next service interval to monitor. Please note that this is a corrected copy for laboratory data updates.

**Wear**
Gear wear is indicated.

**Contamination**
There is a high amount of silt (particulates < 14 microns in size) present in the oil. Elemental level of silicon (Si) above normal.

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

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0934517** | WC0828739 | WC0692948 |
| Sample Date | | Client Info | | **02 Feb 2024** | 23 Jun 2023 | 21 Apr 2022 |
| Machine Age | mls | Client Info | | **509018** | 458573 | 338801 |
| Oil Age | mls | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >500 | ▲ **675** | ▲ 832 | 365 |
| Chromium | ppm | ASTM D5185m | >10 | **5** | 6 | 3 |
| Nickel | ppm | ASTM D5185m | >10 | **4** | 5 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **8** | 7 | 6 |
| Lead | ppm | ASTM D5185m | >25 | **<1** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >100 | **4** | 4 | 2 |
| Tin | ppm | ASTM D5185m | >10 | **<1** | 0 | 0 |
| Antimony | ppm | ASTM D5185m | >5 | **---** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **295** | 307 | 398 |
| Barium | ppm | ASTM D5185m | | **1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **2** | 1 | <1 |
| Manganese | ppm | ASTM D5185m | | **17** | 21 | 6 |
| Magnesium | ppm | ASTM D5185m | | **3** | 7 | 3 |
| Calcium | ppm | ASTM D5185m | | **26** | 26 | 14 |
| Phosphorus | ppm | ASTM D5185m | | **2022** | 2113 | 2110 |
| Zinc | ppm | ASTM D5185m | | **13** | 21 | 5 |
| Sulfur | ppm | ASTM D5185m | | **26947** | 25056 | 20908 |

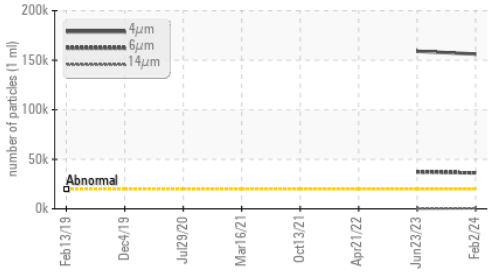
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >75 | ▲ **105** | ▲ 138 | 70 |
| Sodium | ppm | ASTM D5185m | | **10** | 12 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | **7** | 8 | 6 |
| Water | % | ASTM D6304 | >.2 | **0.040** | 0.062 | 0.063 |
| ppm Water | ppm | ASTM D6304 | >2000 | **400** | 629.0 | 633.4 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | ▲ **156245** | ▲ 159049 | --- |
| Particles >6µm | | ASTM D7647 | >5000 | ▲ **36245** | ▲ 37102 | --- |
| Particles >14µm | | ASTM D7647 | >640 | **553** | 135 | --- |
| Particles >21µm | | ASTM D7647 | >160 | **88** | 14 | --- |
| Particles >38µm | | ASTM D7647 | >40 | **1** | 0 | --- |
| Particles >71µm | | ASTM D7647 | >10 | **0** | 0 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | ▲ **24/22/16** | ▲ 24/22/14 | --- |

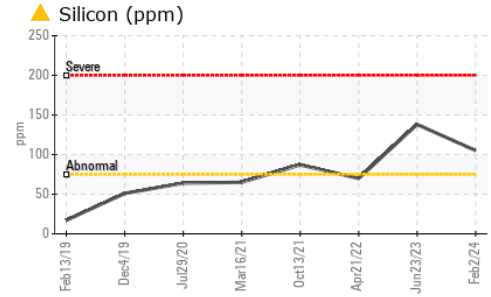
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **3.22** | 3.90 | 3.55 |

# OIL ANALYSIS REPORT

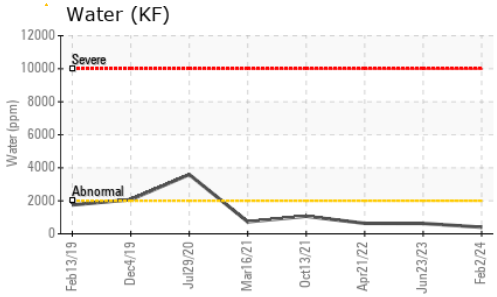
Particle Trend



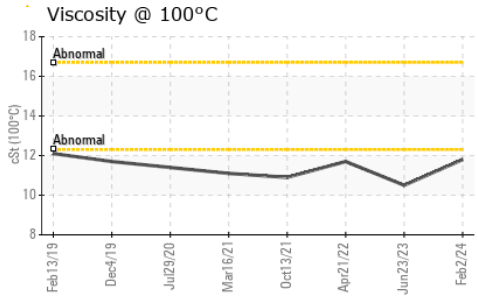

Silicon (ppm)



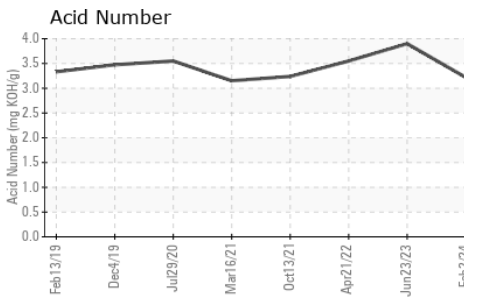

Water (KF)




Viscosity @ 100°C

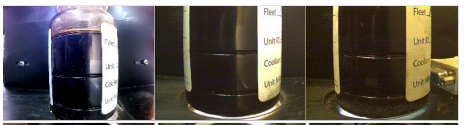
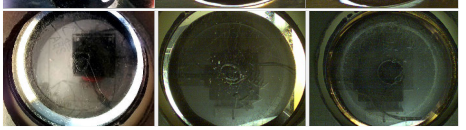



Acid Number



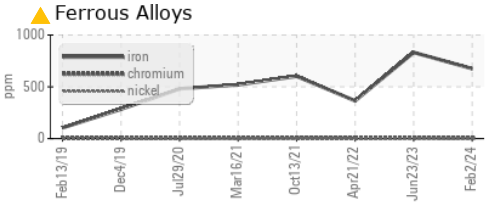

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | | **81.5** | 62.9 | 70.9 |
| Visc @ 100°C | cSt | ASTM D445 | | **11.8** | 10.5 | 11.7 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | **137** | 156 | 160 |

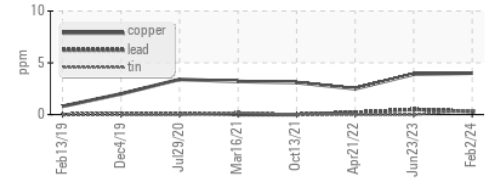
| SAMPLE IMAGES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Color | | | |  | | |
| Bottom | | | |  | | |

## GRAPHS

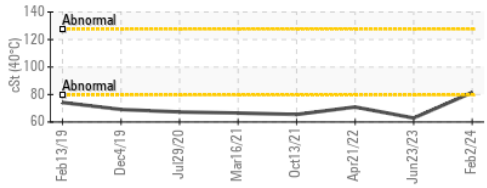
Ferrous Alloys



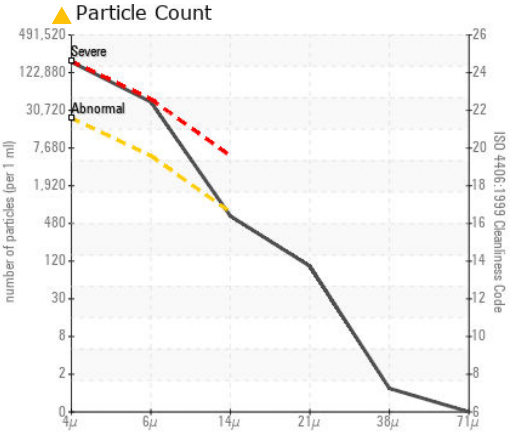

Non-ferrous Metals



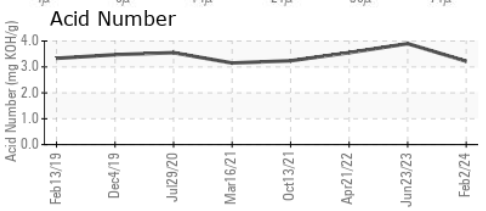

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0934517 **Received** : 15 May 2024
**Lab Number** : 06180633 **Tested** : 17 May 2024
**Unique Number** : 11031959 **Diagnosed** : 18 May 2024 - Jonathan Hester
**Test Package** : MOB 2 ( Additional Tests: KF, KV100, PrtCount, VI )

*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)*

**BASF - GIANNA CREDAROLI**
500 WHITE PLAINS RD
TARRYTOWN, NY
US 10591
Contact: GIANNA CREDAROLI
gianna.credaroli@basf.com
T:
F: