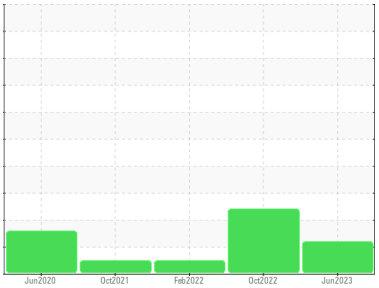
# OIL ANALYSIS REPORT

Area
**METRO**
Machine Id
**METRO 21034**
Component
**Front Differential**
Fluid
**NOT GIVEN (--- GAL)**

Sample Rating Trend




**ISO**

## 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**
All component wear rates are normal.

**Contamination**
There is a high amount of silt (particulates < 14 microns in size) present in the oil.

**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 | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0828797** | WC0751716 | WC0666414 |
| Sample Date | | Client Info | | **07 Jun 2023** | 14 Oct 2022 | 25 Feb 2022 |
| Machine Age | mls | Client Info | | **305726** | 253641 | 186451 |
| 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 | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >500 | **249** | 499 | 434 |
| Chromium | ppm | ASTM D5185m | >10 | **2** | 5 | 4 |
| Nickel | ppm | ASTM D5185m | >10 | **2** | 1 | 2 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **7** | 4 | 4 |
| Lead | ppm | ASTM D5185m | >25 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >100 | **2** | 2 | 2 |
| Tin | ppm | ASTM D5185m | >10 | **0** | 0 | 0 |
| Antimony | ppm | ASTM D5185m | >5 | **---** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **356** | 257 | 322 |
| Barium | ppm | ASTM D5185m | | **2** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **1** | 1 | 1 |
| Manganese | ppm | ASTM D5185m | | **7** | 23 | 22 |
| Magnesium | ppm | ASTM D5185m | | **16** | 11 | 13 |
| Calcium | ppm | ASTM D5185m | | **20** | 24 | 20 |
| Phosphorus | ppm | ASTM D5185m | | **2123** | 1999 | 2051 |
| Zinc | ppm | ASTM D5185m | | **11** | 19 | 15 |
| Sulfur | ppm | ASTM D5185m | | **29232** | 25627 | 20249 |

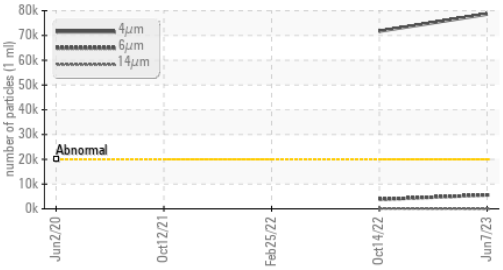
| CONTAMINANTS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >75 | **66** | ▲ 95 | 69 |
| Sodium | ppm | ASTM D5185m | | **11** | 10 | 10 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | 5 | 1 |
| Water | % | ASTM D6304 | >.2 | **0.075** | 0.041 | 0.056 |
| ppm Water | ppm | ASTM D6304 | >2000 | **750.3** | 416.1 | 561.8 |

| FLUID CLEANLINESS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | ▲ **78627** | ▲ 71731 | --- |
| Particles >6µm | | ASTM D7647 | >5000 | ▲ **5581** | 3775 | --- |
| Particles >14µm | | ASTM D7647 | >640 | **37** | 131 | --- |
| Particles >21µm | | ASTM D7647 | >160 | **9** | 41 | --- |
| Particles >38µm | | ASTM D7647 | >40 | **1** | 3 | --- |
| Particles >71µm | | ASTM D7647 | >10 | **0** | 0 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | ▲ **23/20/12** | ▲ 23/19/14 | --- |

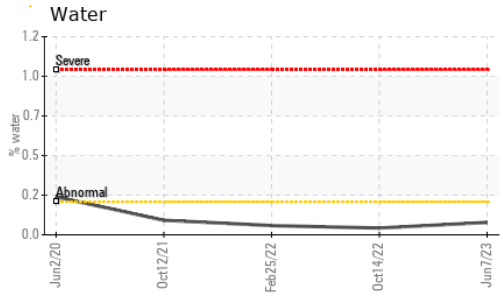
| FLUID DEGRADATION | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **3.02** | 3.20 | 3.50 |

# OIL ANALYSIS REPORT

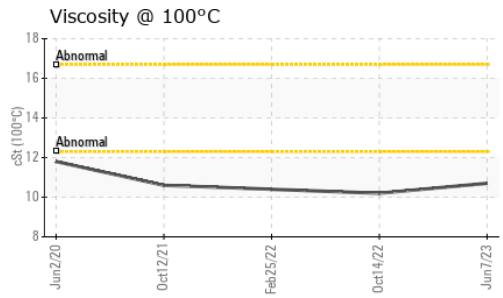
Particle Trend



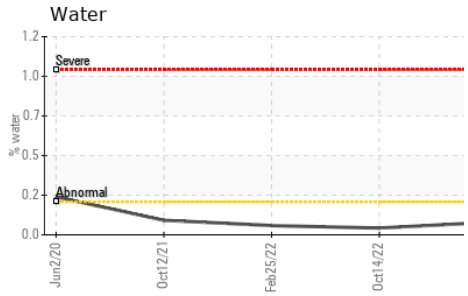

Water



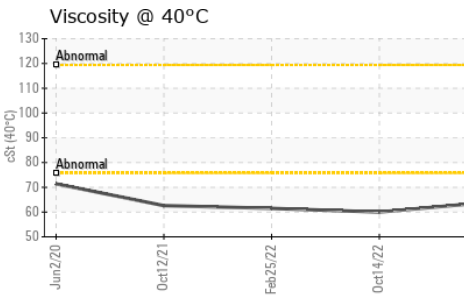

Viscosity @ 100°C




Water

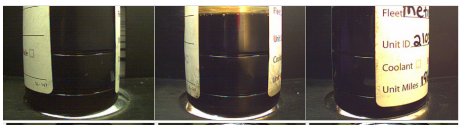



Viscosity @ 40°C



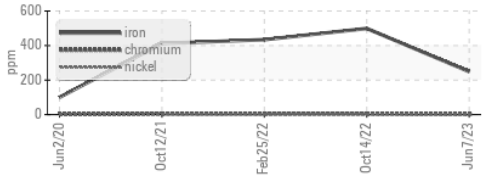

| VISUAL | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | | **63.9** | 60.0 | 61.5 |
| Visc @ 100°C | cSt | ASTM D445 | | **10.7** | 10.2 | 10.4 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | **158** | 158 | 158 |

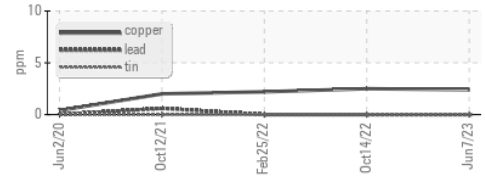
| SAMPLE IMAGES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Color | | | |  | | |
| Bottom | | | |  | | |

## GRAPHS

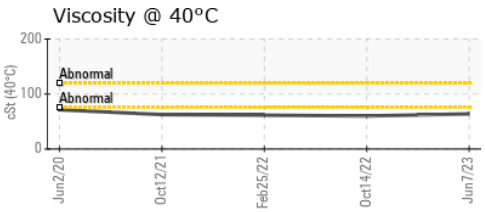
Ferrous Alloys



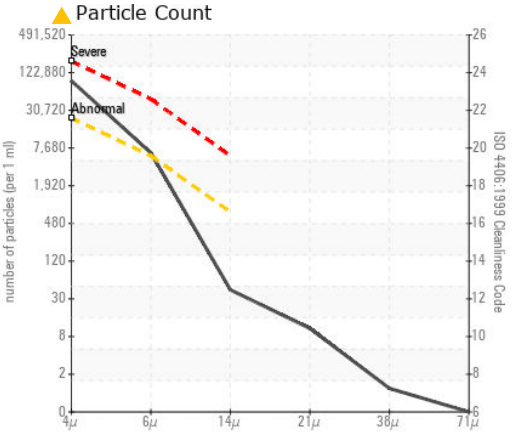

Non-ferrous Metals



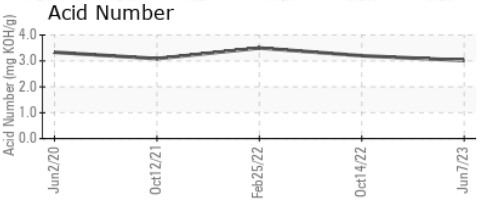

Viscosity @ 40°C




Particle Count




Acid Number




ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0828797 **Received** : 22 Jun 2023
**Lab Number** : 05881470 **Diagnosed** : 30 Jun 2023
**Unique Number** : 10526573 **Diagnostician** : Doug Bogart
**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)*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