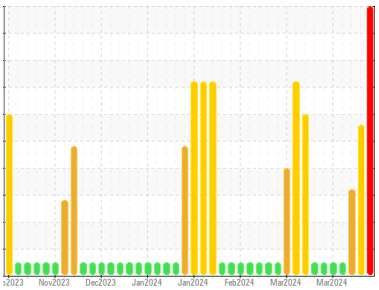
# OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
**WVTM01BE**
Component
**Biogas Engine**
Fluid
**MOBIL Pegasus™ 605 Ultra 40 (--- GAL)**

## DIAGNOSIS

**▲ Recommendation**
We recommend that you drain the oil and perform a filter service on this component if not already done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

**▲ Wear**
The tin level is severe.

**▲ Contamination**
Elemental level of silicon (Si) above normal.

**▲ Fluid Condition**
The BN level is low. The AN level is acceptable for this fluid. The oil is no longer serviceable.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0895541** | WC0895537 | WC0895536 |
| Sample Date | | Client Info | | **19 Apr 2024** | 15 Apr 2024 | 11 Apr 2024 |
| Machine Age | hrs | Client Info | | **115595** | 115499 | 115404 |
| Oil Age | hrs | Client Info | | **763** | 667 | 572 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Not Changd |
| Sample Status | | | | **SEVERE** | SEVERE | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >4.0 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >14 | **6** | 6 | 5 |
| Chromium | ppm | ASTM D5185m | >3 | **<1** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >5 | **3** | 3 | 2 |
| Lead | ppm | ASTM D5185m | >8 | **1** | 2 | <1 |
| Copper | ppm | ASTM D5185m | >5 | **0** | 2 | 1 |
| Tin | ppm | ASTM D5185m | >3 | ▲ **5** | ▲ 4 | 2 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **40** | 45 | 62 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **1** | 1 | 2 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | | **21** | 20 | 14 |
| Calcium | ppm | ASTM D5185m | | **1738** | 1697 | 1659 |
| Phosphorus | ppm | ASTM D5185m | | **414** | 424 | 369 |
| Zinc | ppm | ASTM D5185m | | **608** | 606 | 503 |
| Sulfur | ppm | ASTM D5185m | | **5900** | 6062 | 4699 |

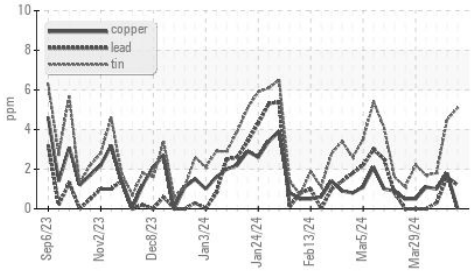
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >180 | ▲ **207** | ▲ 186 | 158 |
| Sodium | ppm | ASTM D5185m | >20 | **1** | 2 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 2 | 0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0** | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | | **4.1** | 4.1 | 3.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | | **27.4** | 26.7 | 24.6 |

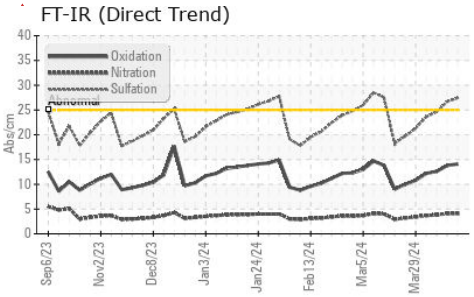
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | | **14.1** | 13.8 | 12.6 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **2.67** | 2.44 | 2.19 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 5.7 | ▲ **1.70** | ▲ 1.83 | ▲ 2.29 |

# OIL ANALYSIS REPORT

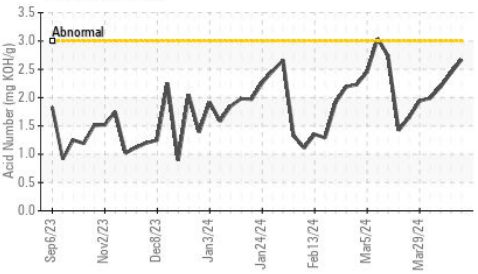
Non-ferrous Metals



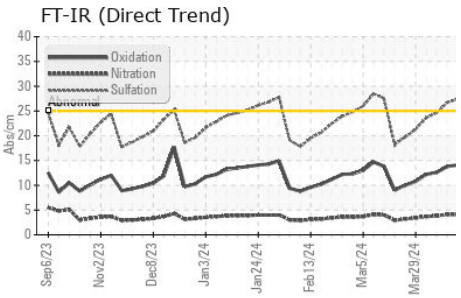

FT-IR (Direct Trend)



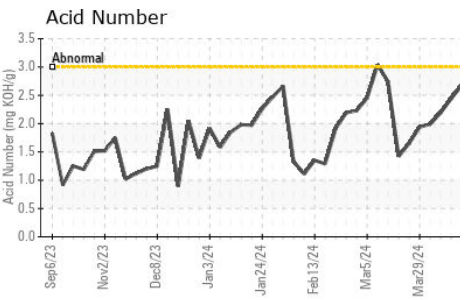

Acid Number




FT-IR (Direct Trend)




Acid Number

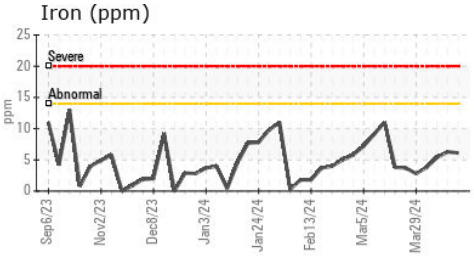



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

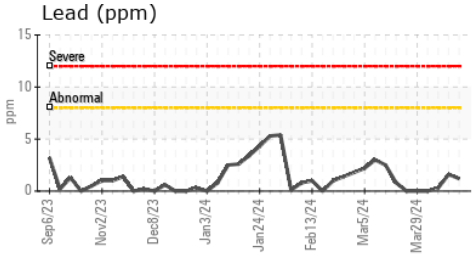
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15 | **15.1** | 15.0 | 14.8 |

## GRAPHS

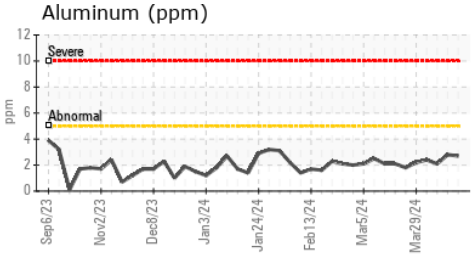
Iron (ppm)



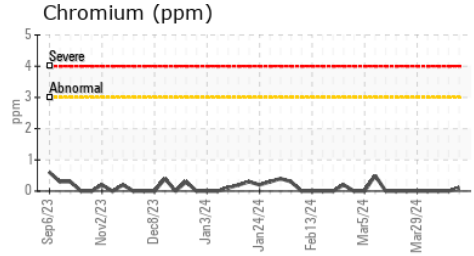

Lead (ppm)



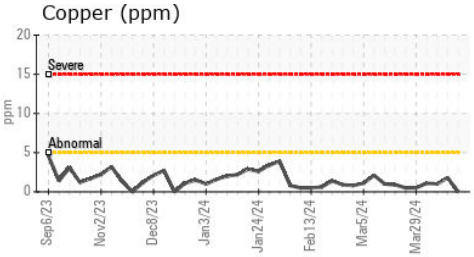

Aluminum (ppm)



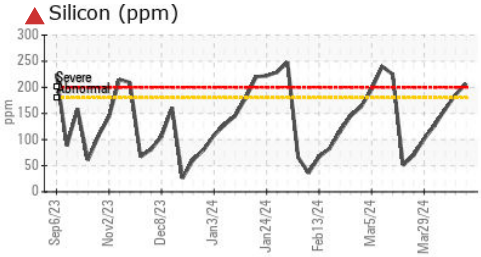

Chromium (ppm)



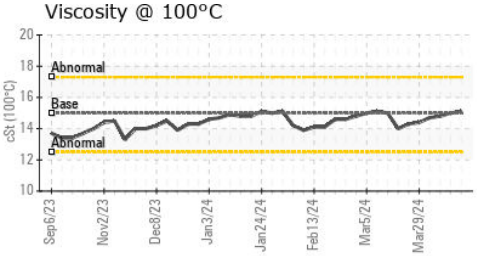

Copper (ppm)



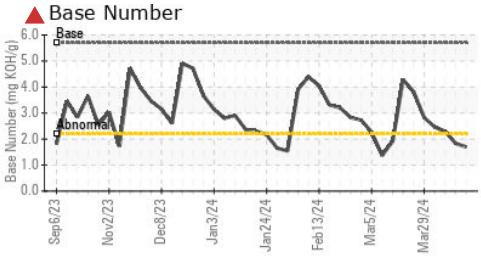

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0895541
**Lab Number** : 06157838
**Unique Number** : 10993261
**Test Package** : MOB 2

**Received** : 23 Apr 2024
**Tested** : 24 Apr 2024
**Diagnosed** : 25 Apr 2024 - Don Baldridge

*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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