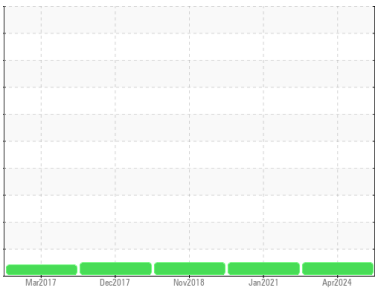
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## BELLOWS ST
Component
**Natural Gas Engine**
Fluid
**{not provided} (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
There is no indication of any contamination in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **RP0039517** | RP0016532 | RP203752 |
| Sample Date | | Client Info | | **19 Apr 2024** | 20 Jan 2021 | 20 Nov 2018 |
| Machine Age | hrs | Client Info | | **69** | 60 | 53 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **8** | 8 | 6 |
| Chromium | ppm | ASTM D5185m | >4 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | <1 | <1 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >9 | **3** | 6 | 1 |
| Lead | ppm | ASTM D5185m | >30 | **<1** | 1 | <1 |
| Copper | ppm | ASTM D5185m | >35 | **3** | 8 | 2 |
| Tin | ppm | ASTM D5185m | >4 | **<1** | <1 | 0 |
| Antimony | ppm | ASTM D5185m | | **---** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **3** | 18 | 51 |
| Barium | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | | **124** | 31 | 5 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | **850** | 11 | 7 |
| Calcium | ppm | ASTM D5185m | | **2912** | 2865 | 1607 |
| Phosphorus | ppm | ASTM D5185m | | **309** | 536 | 594 |
| Zinc | ppm | ASTM D5185m | | **331** | 542 | 385 |

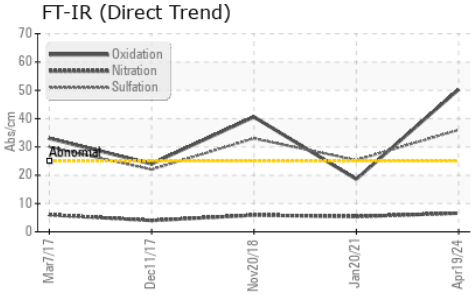
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >+100 | **17** | 11 | 19 |
| Sodium | ppm | ASTM D5185m | | **<1** | 5 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | 2 | 0 |
| Water | % | ASTM D6304 | >0.1 | **NEG** | NEG | NEG |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **6.6** | 5.4 | 5.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **36.0** | 25.3 | 33 |

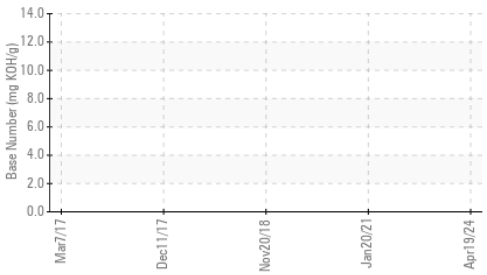
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **50.3** | 18.6 | 40.6 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **---** | 0.729 | 0.954 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **12.62** | --- | --- |

# OIL ANALYSIS REPORT

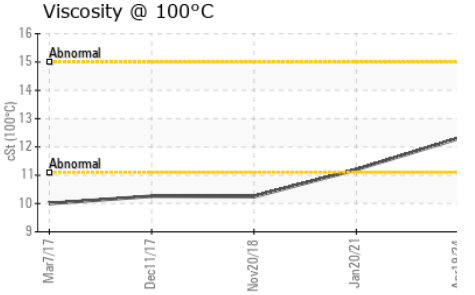
FT-IR (Direct Trend)



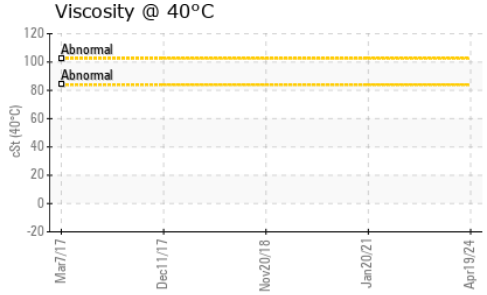

Base Number



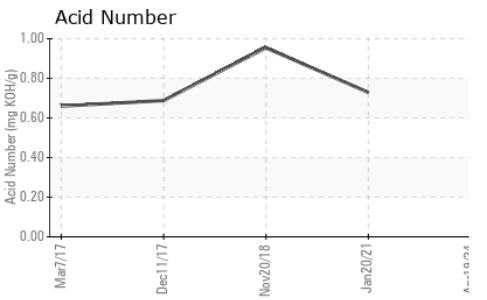

Viscosity @ 100°C




Viscosity @ 40°C




Acid Number

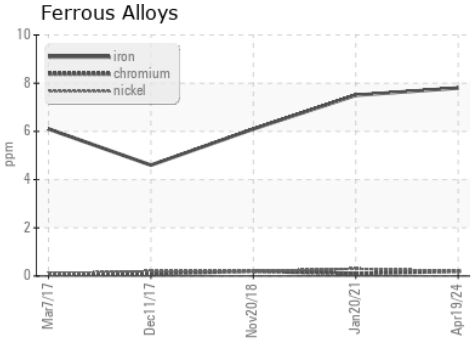



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | >0.1 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

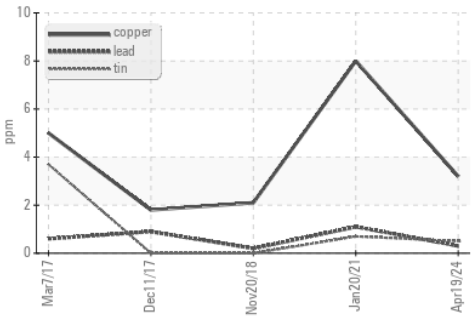
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | | **12.3** | 11.2 | 10.24 |

## GRAPHS

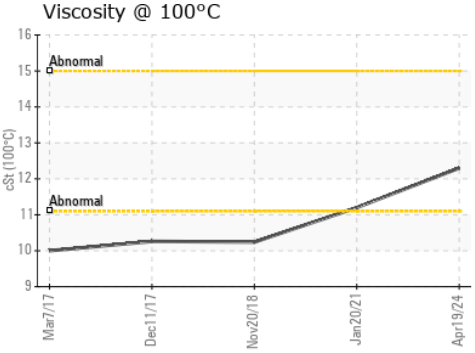
Ferrous Alloys



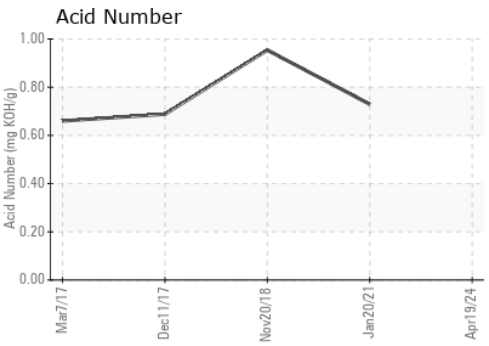

Non-ferrous Metals




Viscosity @ 100°C




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : RP0039517
**Lab Number** : 06179518
**Unique Number** : 11030844
**Test Package** : IND 2 ( Additional Tests: FT-IR, KV100, TBN )

**Received** : 14 May 2024
**Tested** : 17 May 2024
**Diagnosed** : 17 May 2024 - Sean Felton

*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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Report Id: WARWARRI [WUSCAR] 06179518 (Generated: 05/17/2024 10:10:03) Rev: 1

Contact/Location: JOHN BROSNAHAN - WARWARRI