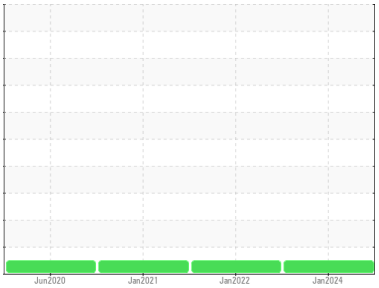
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
## GENERATOR
Machine Id
## ONAN V154 (S/N NO INFO ON BOTTLE)
Component
**Diesel Engine**
Fluid
**SHELL ROTELLA T 15W40 (8 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 | | **HPL0002292** | RP0012744 | RP0012650 |
| Sample Date | | Client Info | | **03 Jan 2024** | 13 Jan 2022 | 06 Jan 2021 |
| Machine Age | hrs | Client Info | | **754** | 725 | 711 |
| Oil Age | hrs | Client Info | | **88** | 60 | 77 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **7** | 6 | 5 |
| Chromium | ppm | ASTM D5185m | >20 | **5** | 3 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **3** | 0 | <1 |
| Lead | ppm | ASTM D5185m | >40 | **3** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **119** | 37 | 12 |
| Tin | ppm | ASTM D5185m | >15 | **1** | <1 | <1 |
| Antimony | ppm | ASTM D5185m | | **---** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 316 | **157** | 183 | 188 |
| Barium | ppm | ASTM D5185m | 0.0 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 1.2 | **234** | 102 | 41 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 24 | **221** | 80 | 37 |
| Calcium | ppm | ASTM D5185m | 2292 | **2780** | 2393 | 2480 |
| Phosphorus | ppm | ASTM D5185m | 1064 | **1115** | 910 | 1024 |
| Zinc | ppm | ASTM D5185m | 1160 | **1263** | 1033 | 1197 |
| Sulfur | ppm | ASTM D5185m | 4996 | **8472** | 4836 | 4083 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **7** | 4 | 1 |
| Sodium | ppm | ASTM D5185m | | **3** | 0 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 7 | 7 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.0** | 8.9 | 7.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **25.8** | 25.0 | 23.3 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **22.3** | 21.1 | 19.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.1 | **11.85** | 9.03 | 8.28 |

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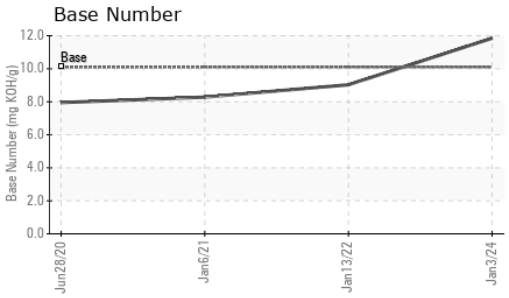
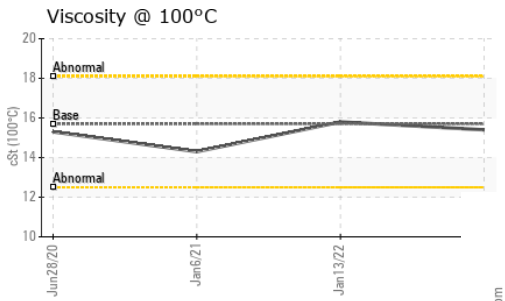
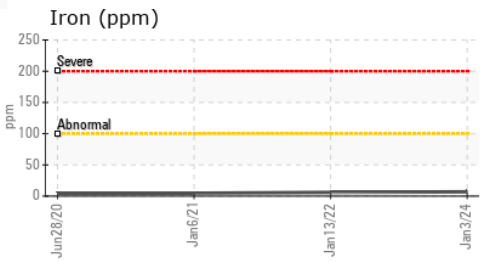


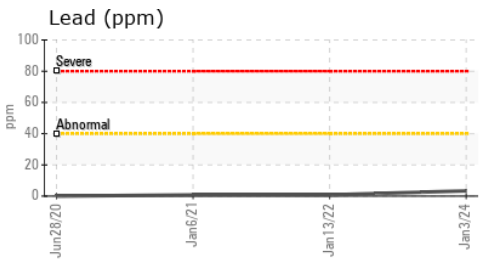



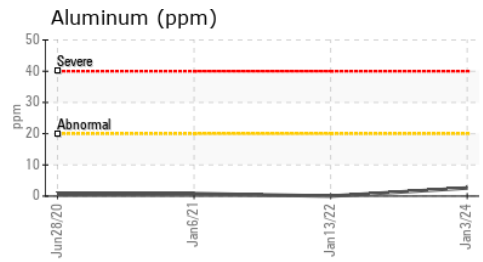

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

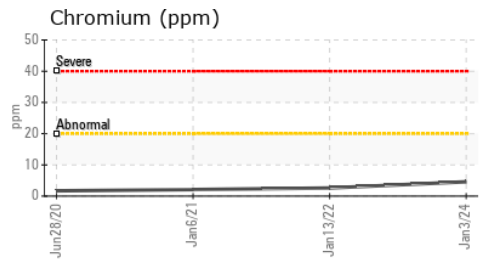
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.7 | **15.4** | 15.8 | 14.3 |

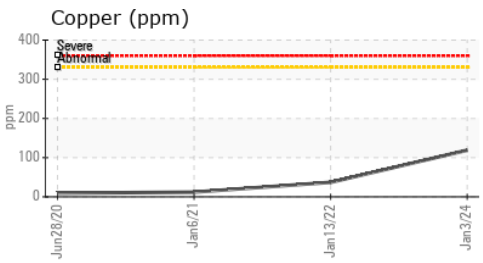
## GRAPHS

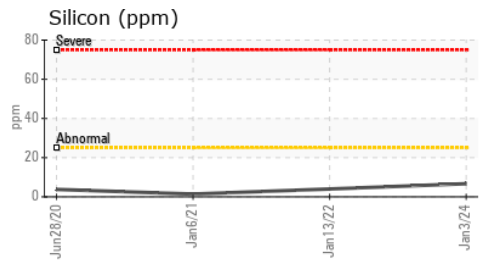


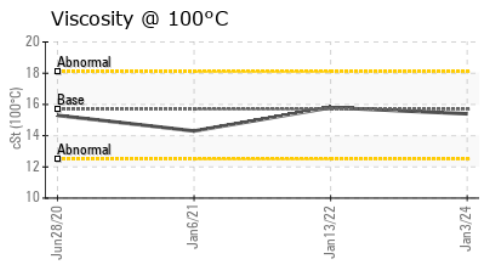



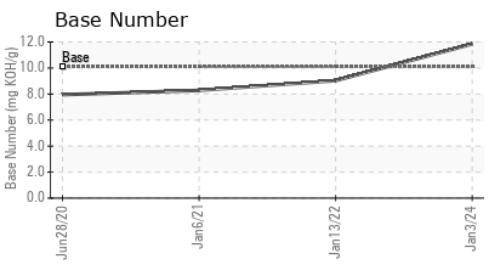




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : HPL0002292
**Lab Number** : 06054089
**Unique Number** : 10820038
**Test Package** : MOB 2

**Recieved** : 08 Jan 2024
**Diagnosed** : 09 Jan 2024
**Diagnostician** : 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: MUSMUSIA [WUSCAR] 06054089 (Generated: 01/09/2024 16:33:46) Rev: 1

Submitted By: JONATHAN KLEIN