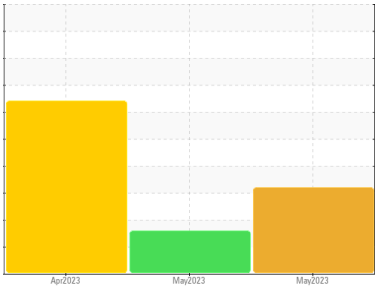
# OIL ANALYSIS REPORT

Sample Rating Trend




**WATER**

Area
**RIG 879**
Machine Id
**R879-P-02-NKL**
Component
**Pump**
Fluid
**GEAR OIL ISO 320 (--- GAL)**

## DIAGNOSIS

**Recommendation**

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample.

**Wear**

All component wear rates are normal.

**Contamination**

Appearance is milky. There is a high amount of visible silt present in the sample. There is a light concentration of water present in the oil.

**Fluid Condition**

The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **KL0012217** | KL0012424 | KL0009707 |
| Sample Date | | Client Info | | **23 May 2023** | 01 May 2023 | 19 Apr 2023 |
| Machine Age | days | Client Info | | **45069** | 45047 | 45035 |
| Oil Age | days | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | Changed | Not Changd |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | SEVERE |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >500 | **27** | 13 | 43 |
| Chromium | ppm | ASTM D5185m | >7 | **<1** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **3** | <1 | 3 |
| Lead | ppm | ASTM D5185m | >35 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >50 | **2** | <1 | 2 |
| Tin | ppm | ASTM D5185m | >5 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 50 | **15** | 19 | 1 |
| Barium | ppm | ASTM D5185m | 15 | **11** | 0 | 10 |
| Molybdenum | ppm | ASTM D5185m | 15 | **13** | 10 | 55 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 50 | **20** | 18 | 8 |
| Calcium | ppm | ASTM D5185m | 50 | **86** | 57 | 250 |
| Phosphorus | ppm | ASTM D5185m | 350 | **183** | 194 | 177 |
| Zinc | ppm | ASTM D5185m | 100 | **75** | 25 | 70 |
| Sulfur | ppm | ASTM D5185m | 12500 | **10599** | 10227 | 13486 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >50 | **13** | 8 | 19 |
| Sodium | ppm | ASTM D5185m | | **48** | 36 | 45 |
| Potassium | ppm | ASTM D5185m | >20 | **1** | 1 | 1 |
| Water | % | ASTM D6304 | | ▲ **0.389** | --- | ⬢ 2.89 |
| ppm Water | ppm | ASTM D6304 | >.1 | ▲ **3890** | --- | ⬢ 28900 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | | **---** | 170561 | --- |
| Particles >6µm | | ASTM D7647 | >1300 | **---** | ▲ 66481 | --- |
| Particles >14µm | | ASTM D7647 | >160 | **---** | ▲ 2660 | --- |
| Particles >21µm | | ASTM D7647 | >40 | **---** | ▲ 487 | --- |
| Particles >38µm | | ASTM D7647 | >10 | **---** | 9 | --- |
| Particles >71µm | | ASTM D7647 | >3 | **---** | 0 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >17/14 | **---** | ▲ 23/19 | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.85 | **0.72** | 0.35 | 0.26 |

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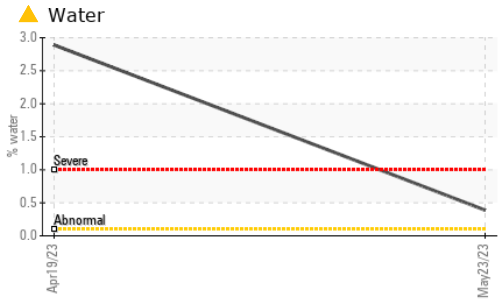
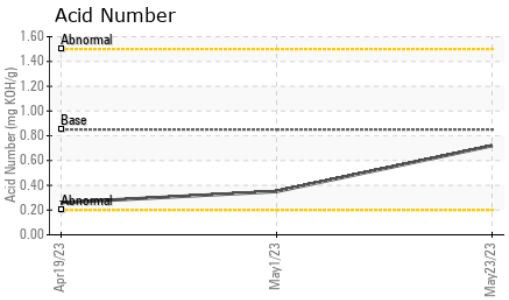
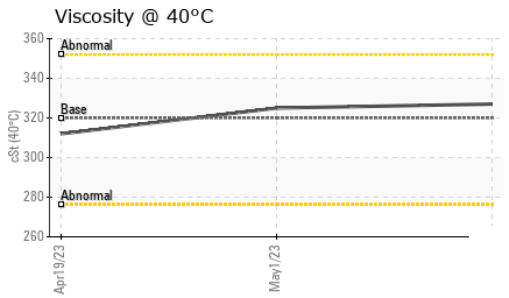
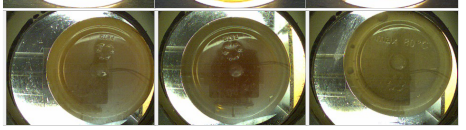


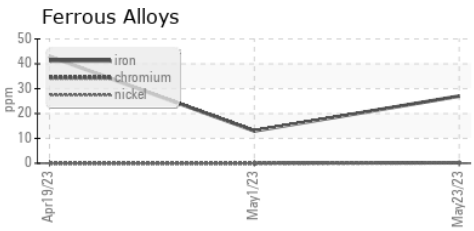



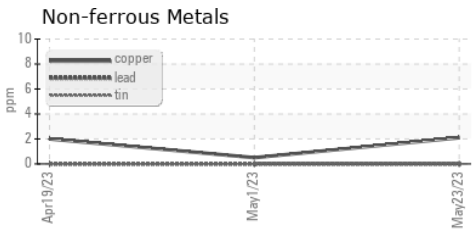

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | ▲ **MODER** | NONE | ▲ HEAVY |
| Debris | scalar | *Visual | NONE | **LIGHT** | LIGHT | LIGHT |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Appearance | scalar | *Visual | NORML | ▲ **MILKY** | NORML | ▲ MILKY |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | *Visual | | ▲ **0.2%** | NEG | ⬢ 0.2% |
| Free Water | scalar | *Visual | | **NEG** | NEG | ▲ 1.0 |

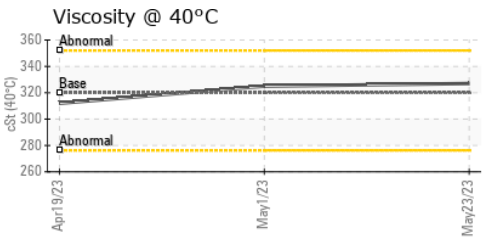
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 320 | **327** | 325 | 312 |

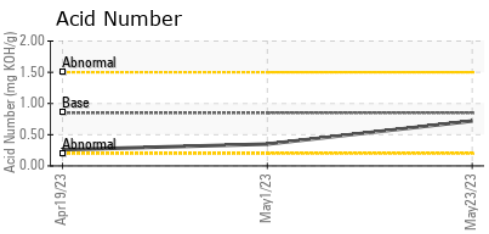
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : KL0012217 **Received** : 25 May 2023
**Lab Number** : 05857190 **Diagnosed** : 26 May 2023
**Unique Number** : 10486545 **Diagnostician** : Doug Bogart
**Test Package** : MOB 2 ( Additional Tests: KF, PrtCount )

*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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