MOB II WEAR CHECK

# OIL ANALYSIS REPORT

| | |
|---|---|
| WEAR | NORMAL |
| CONTAMINATION | ABNORMAL |
| FLUID CONDITION | NORMAL |

Area
## RIG 2
Machine Id
## CATERPILLAR 3512 R2-G-03-NKL
Component
## Diesel Engine
Fluid
## CHEVRON 15W40 (--- GAL)

## RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

## WEAR

All component wear rates are normal.

## CONTAMINATION

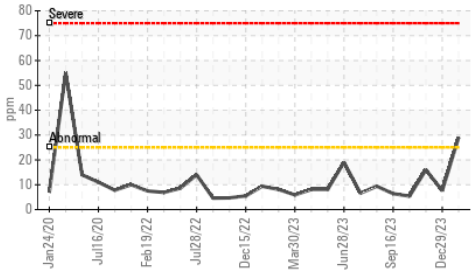
Elemental level of silicon (Si) above normal indicating ingress of seal material. The amount and size of particulates present in the system are acceptable.

## FLUID CONDITION

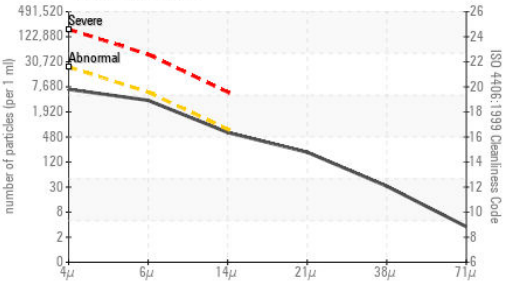
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | KL0013831 | KL0014051 | KL0013110 |
| Sample Date | | Client Info | | 24 Jan 2024 | 29 Dec 2023 | 17 Nov 2023 |
| Machine Age | days | Client Info | | 0 | 45290 | 45427 |
| Oil Age | days | Client Info | | 0 | 0 | 0 |
| Filter Age | days | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | ABNORMAL | ATTENTION | ATTENTION |
| Iron | ppm | ASTM D5185m | >100 | 9 | 3 | 1 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | 4 | 3 | 2 |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | 0 |
| Copper | ppm | ASTM D5185m | >330 | 1 | 9 | <1 |
| Tin | ppm | ASTM D5185m | >15 | 0 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >25 | ▲ 29 | 8 | 16 |
| Potassium | ppm | ASTM D5185m | >20 | <1 | 2 | 0 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.2 | 0.1 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.6 | 6.5 | 7.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 23.9 | 23.2 | 23.5 |
| Particles >4µm | | ASTM D7647 | >20000 | 5829 | 9021 | 12867 |
| Particles >6µm | | ASTM D7647 | >5000 | 3175 | 4915 | ▲ 7009 |
| Particles >14µm | | ASTM D7647 | >640 | 540 | ▲ 836 | ▲ 1193 |
| Particles >21µm | | ASTM D7647 | >160 | 182 | ▲ 282 | ▲ 402 |
| Particles >38µm | | ASTM D7647 | >40 | 28 | ▲ 43 | ▲ 62 |
| Particles >71µm | | ASTM D7647 | >10 | 3 | 4 | 6 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | 20/19/16 | ▲ 20/19/17 | ▲ 21/20/17 |
| 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 |
| Sodium | ppm | ASTM D5185m | >50 | 3 | 0 | <1 |
| Boron | ppm | ASTM D5185m | | 325 | 365 | 352 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 128 | 122 | 130 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | | 685 | 648 | 681 |
| Calcium | ppm | ASTM D5185m | | 1507 | 1547 | 1564 |
| Phosphorus | ppm | ASTM D5185m | | 700 | 753 | 719 |
| Zinc | ppm | ASTM D5185m | | 853 | 828 | 864 |
| Sulfur | ppm | ASTM D5185m | | 2496 | 2839 | 2411 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 17.8 | 16.4 | 17.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 8.71 | 9.53 | 10.21 |
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | 13.1 | 13.4 | 13.3 |

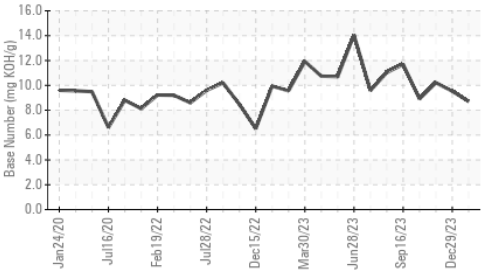
Silicon (ppm)



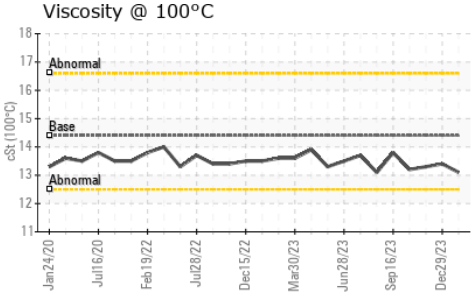

Particle Count



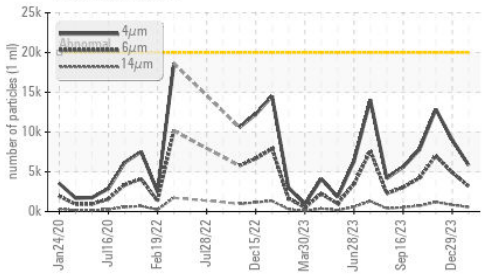

Base Number



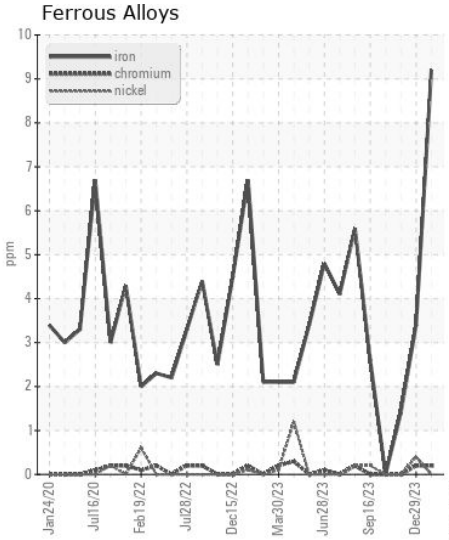

Viscosity @ 100°C



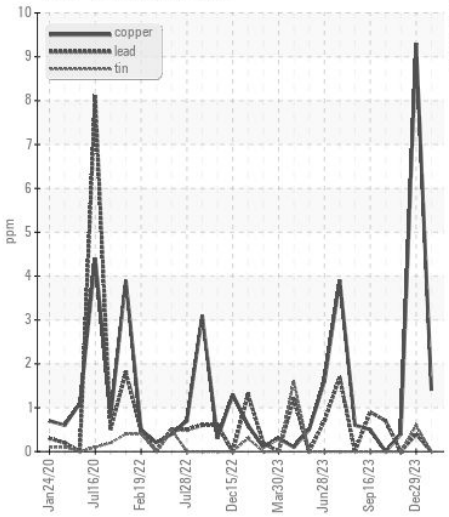

Particle Trend



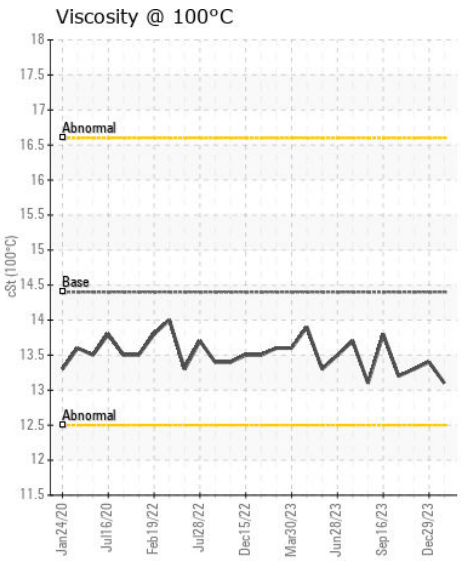

Ferrous Alloys



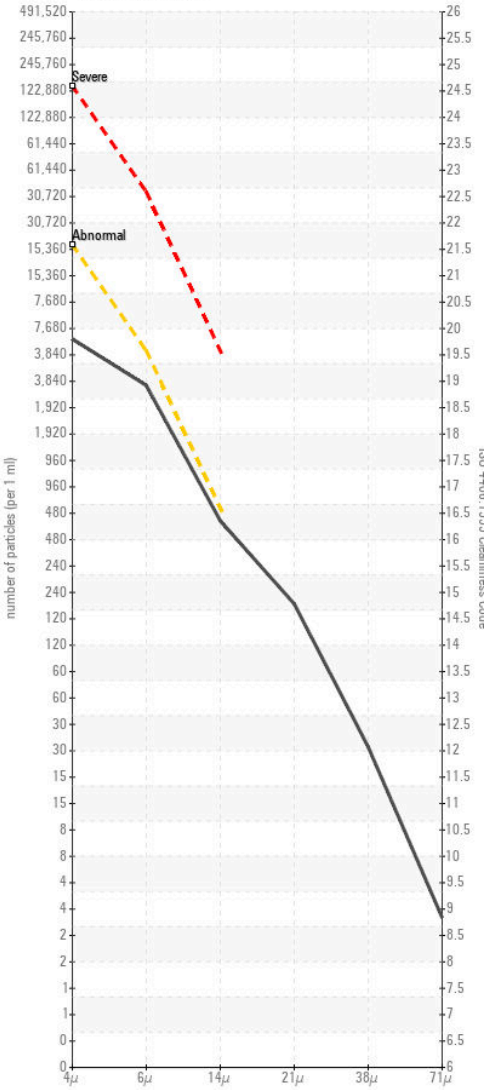

Non-ferrous Metals



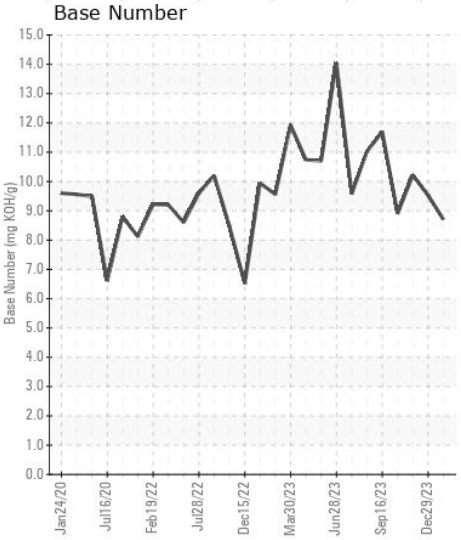

Viscosity @ 100°C




Particle Count




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : KL0013831
**Lab Number** : 06083131
**Unique Number** : 10870576
**Test Package** : MOB 2 ( Additional Tests: PrtCount )

**Received** : 07 Feb 2024
**Tested** : 08 Feb 2024
**Diagnosed** : 09 Feb 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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