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

Machine Id
EPIROC D65-10SF TMG21SED0629

Component
Diesel Engine

Fluid
JOHN DEERE ENGINE OIL PLUS 50 II 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | JR0202351 | JR0197331 | JR0191091 |
| Sample Date | | Client Info | | 27 Feb 2024 | 16 Jan 2024 | 29 Nov 2023 |
| Machine Age | hrs | Client Info | | 4311 | 4098 | 3887 |
| Oil Age | hrs | Client Info | | 213 | 211 | 0 |
| Filter Age | hrs | Client Info | | 213 | 211 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 10 | 14 | 20 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | 1 |
| Nickel | ppm | ASTM D5185m | >4 | <1 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 4 | 4 | 7 |
| Lead | ppm | ASTM D5185m | >40 | <1 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 3 | 5 | 25 |
| Tin | ppm | ASTM D5185m | >15 | <1 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | <1 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

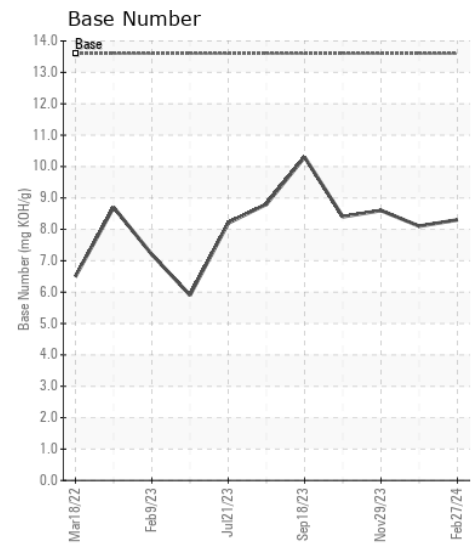
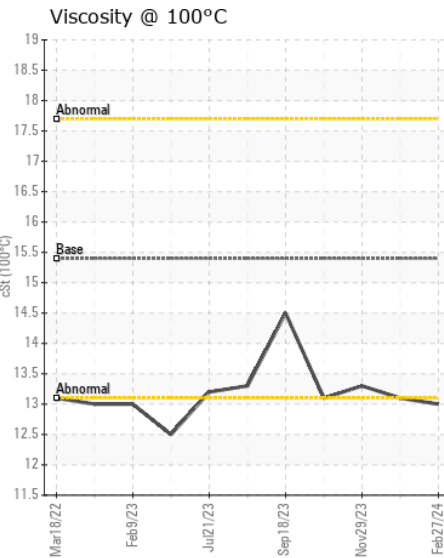
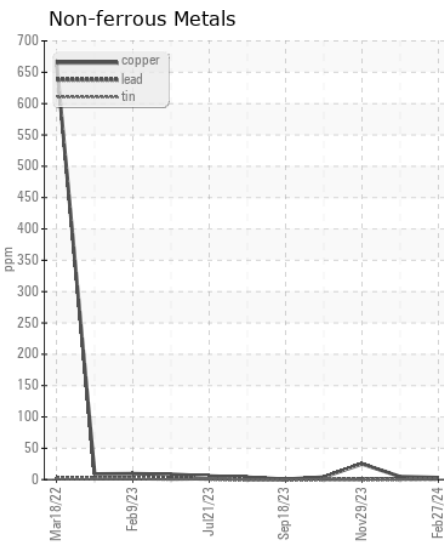
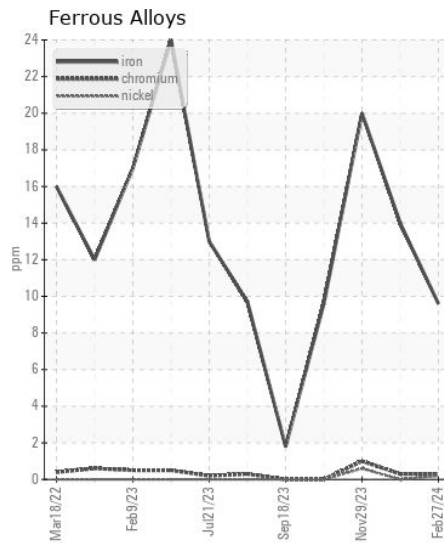
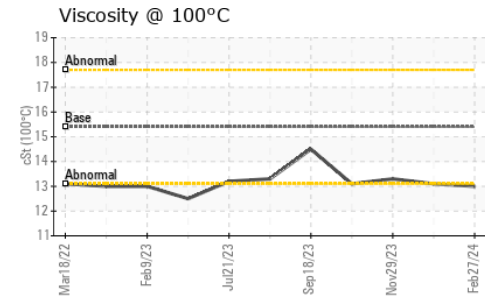
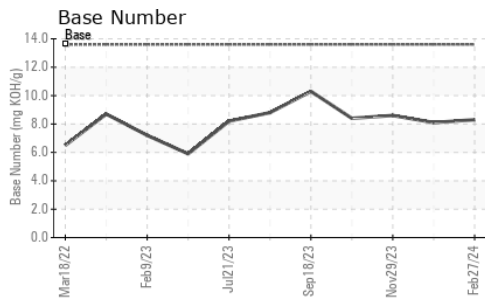
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >25 | 11 | 13 | 10 |
| Potassium | ppm | ASTM D5185m | >20 | 2 | 2 | 2 |
| 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 | 0.2 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 8.4 | 8.8 | 8.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 21.7 | 22.7 | 21.8 |
| 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 |

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.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | | 2 | 1 | 4 |
| Boron | ppm | ASTM D5185m | | 210 | 188 | 146 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 260 | 248 | 217 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 981 | 865 | 756 |
| Calcium | ppm | ASTM D5185m | | 1689 | 1499 | 1308 |
| Phosphorus | ppm | ASTM D5185m | | 948 | 874 | 854 |
| Zinc | ppm | ASTM D5185m | | 1308 | 1130 | 1043 |
| Sulfur | ppm | ASTM D5185m | | 3404 | 3001 | 3150 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 16.3 | 17.3 | 16.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 13.6 | 8.3 | 8.1 | 8.6 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.0 | 13.1 | 13.3 |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : JR0202351 **Received** : 29 Feb 2024
Lab Number : 06104185 **Tested** : 01 Mar 2024
Unique Number : 10902415 **Diagnosed** : 01 Mar 2024 - Wes Davis
Test Package : CONST (Additional Tests: TBN)

GARNER - MARTIN MARIETTA
 1111 E GARNER RD
 GARNER, NC
 US 27529
 Contact: JASON GILMORE
 jason.gilmore@martinmarietta.com

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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F: