



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

Machine Id
JOHN DEERE 844L AH 1DW844LAEML712419
 Component
Diesel Engine
 Fluid
JOHN DEERE ENGINE OIL PLUS 50 II 15W40 (--- GAL)

RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | JR0212632 | JR0202261 | JR0197981 |
| Sample Date | | Client Info | | 29 May 2024 | 09 Feb 2024 | 08 Dec 2023 |
| Machine Age | hrs | Client Info | | 9003 | 8036 | 7540 |
| Oil Age | hrs | Client Info | | 0 | 496 | 501 |
| Filter Age | hrs | Client Info | | 0 | 496 | 501 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | ABNORMAL | MARGINAL | ABNORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >51 | 19 | 20 | 21 |
| Chromium | ppm | ASTM D5185m | >11 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | <1 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >31 | 6 | 4 | 5 |
| Lead | ppm | ASTM D5185m | >26 | 10 | 12 | 10 |
| Copper | ppm | ASTM D5185m | >26 | 6 | 10 | 13 |
| Tin | ppm | ASTM D5185m | >4 | 2 | 1 | 3 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

Fuel content negligible. No other contaminants were detected in the oil.

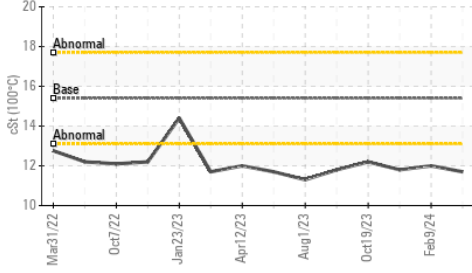
| | | | | | | |
|------------------|----------|-------------|-------|--------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >22 | 9 | 8 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | 2 | 3 | <1 |
| Fuel | % | ASTM D3524 | >8.0 | 5.2 | 4.4 | 5.2 |
| Water | | WC Method | >0.21 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.4 | 0.5 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 9.5 | 10.2 | 7.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 23.3 | 25.2 | 19.4 |
| 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 | >0.21 | NEG | NEG | NEG |

FLUID CONDITION

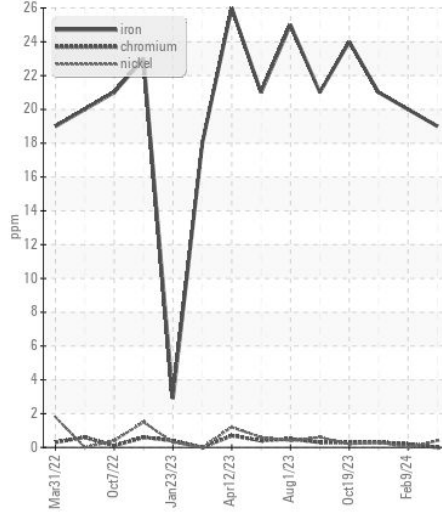
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

| | | | | | | |
|------------------|----------|-------------|------|---------------|--------|--------|
| Sodium | ppm | ASTM D5185m | >31 | 7 | 2 | 3 |
| Boron | ppm | ASTM D5185m | | 66 | 85 | 60 |
| Barium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 87 | 253 | 83 |
| Manganese | ppm | ASTM D5185m | | <1 | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | | 286 | 749 | 325 |
| Calcium | ppm | ASTM D5185m | | 1731 | 1349 | 1670 |
| Phosphorus | ppm | ASTM D5185m | | 998 | 787 | 905 |
| Zinc | ppm | ASTM D5185m | | 1147 | 1011 | 1131 |
| Sulfur | ppm | ASTM D5185m | | 3698 | 2749 | 3201 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 17.4 | 20.4 | 14.5 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 13.6 | 7.0 | 6.9 | 10.0 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ 11.7 | ▲ 12.0 | ▲ 11.8 |

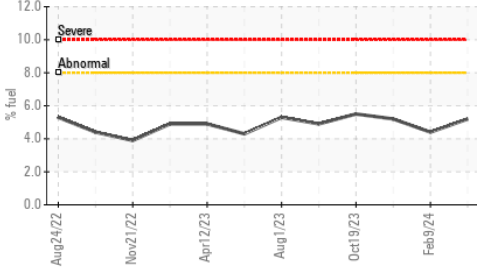
▲ Viscosity @ 100°C



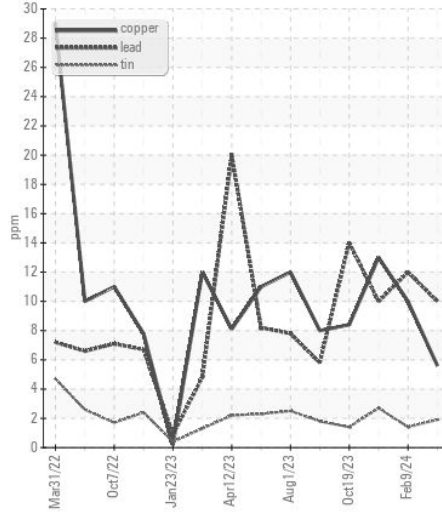
Ferrous Alloys



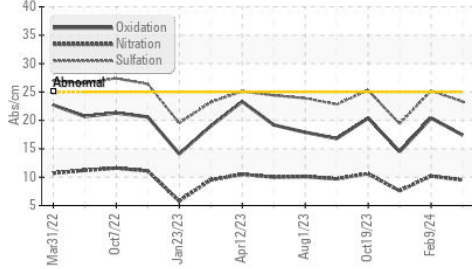
Fuel Dilution



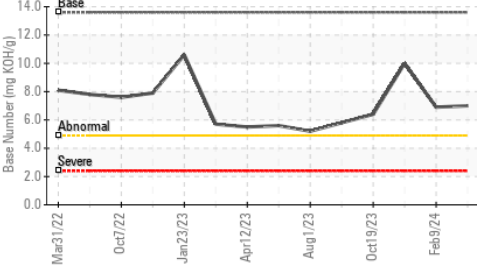
Non-ferrous Metals



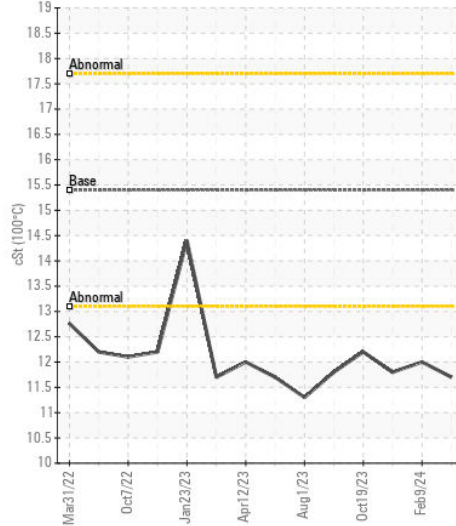
FT-IR (Direct Trend)



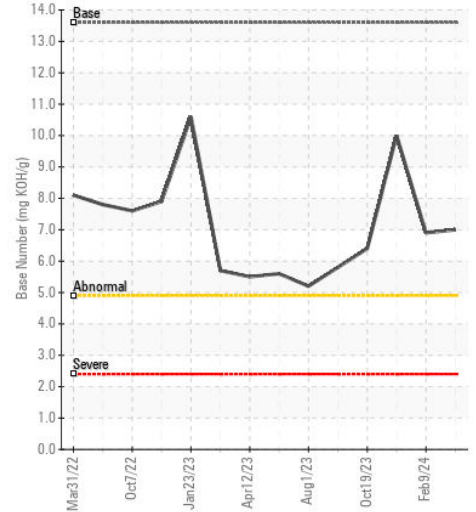
Base Number



▲ Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : JR0212632 **Received** : 30 May 2024
Lab Number : 06195295 **Tested** : 05 Jun 2024
Unique Number : 11057418 **Diagnosed** : 05 Jun 2024 - Jonathan Hester
Test Package : CONST (Additional Tests: FuelDilution, PercentFuel, 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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