



# OIL ANALYSIS REPORT

|                 |                 |
|-----------------|-----------------|
| WEAR            | <b>NORMAL</b>   |
| CONTAMINATION   | <b>ABNORMAL</b> |
| FLUID CONDITION | <b>ABNORMAL</b> |



Area  
**[MH-4]**  
Machine Id  
**LIEBHERR R954B MH-4 (S/N 015630-629)**  
Component  
**Diesel Engine**  
Fluid  
**DURAMAX 15W40 (10 GAL)**

## RECOMMENDATION

We advise that you check the fuel injection system. We recommend an early resample to monitor this condition. ( Customer Sample Comment: Resample looking for fuel contamination )

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>DC0028669</b>   | DC0028811   | DC0021536   |
| Sample Date    |     | Client Info |           | <b>18 Jan 2024</b> | 21 Dec 2023 | 08 May 2023 |
| Machine Age    | hrs | Client Info |           | <b>12377</b>       | 12300       | 11818       |
| Oil Age        | hrs | Client Info |           | <b>77</b>          | 482         | 401         |
| Filter Age     | hrs | Client Info |           | <b>77</b>          | 482         | 401         |
| Oil Changed    |     | Client Info |           | <b>Not Chngd</b>   | Changed     | Changed     |
| Filter Changed |     | Client Info |           | <b>Not Chngd</b>   | Changed     | Changed     |
| Sample Status  |     |             |           | <b>ABNORMAL</b>    | SEVERE      | SEVERE      |

## WEAR

All component wear rates are normal.

|              |        |             |      |              |      |      |
|--------------|--------|-------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185m | >100 | <b>0</b>     | 34   | 3    |
| Chromium     | ppm    | ASTM D5185m | >5   | <b>&lt;1</b> | 1    | 0    |
| Nickel       | ppm    | ASTM D5185m | >5   | <b>0</b>     | 0    | 0    |
| Titanium     | ppm    | ASTM D5185m |      | <b>0</b>     | <1   | <1   |
| Silver       | ppm    | ASTM D5185m | >3   | <b>0</b>     | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185m | >15  | <b>1</b>     | 2    | <1   |
| Lead         | ppm    | ASTM D5185m | >30  | <b>2</b>     | 4    | 0    |
| Copper       | ppm    | ASTM D5185m | >125 | <b>0</b>     | 2    | <1   |
| Tin          | ppm    | ASTM D5185m | >5   | <b>0</b>     | <1   | 0    |
| Vanadium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | 0    | 0    |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

## CONTAMINATION

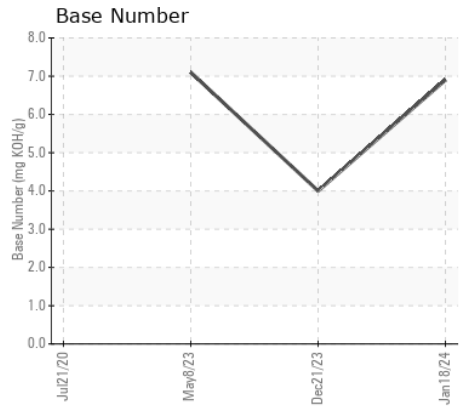
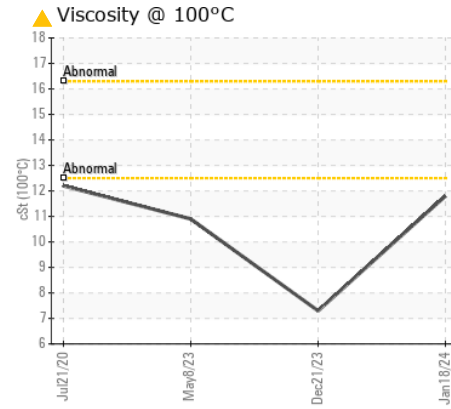
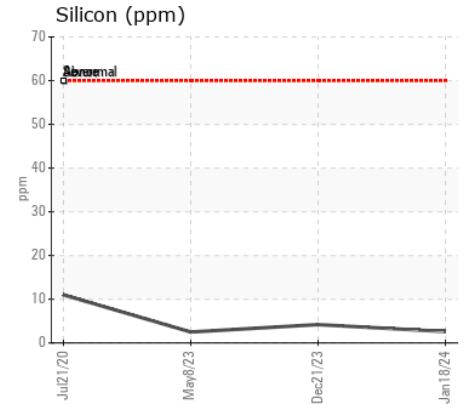
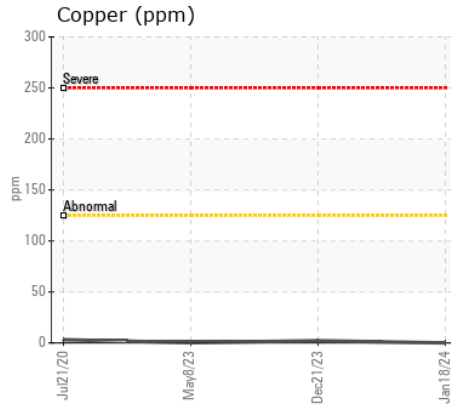
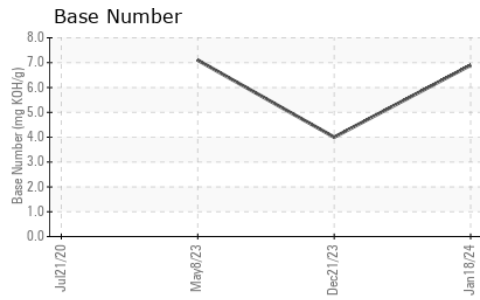
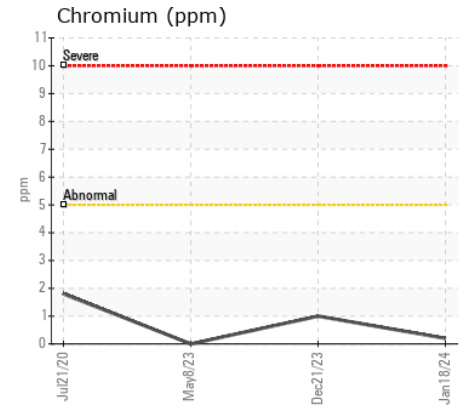
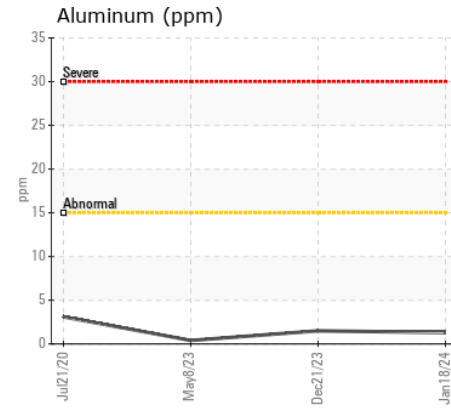
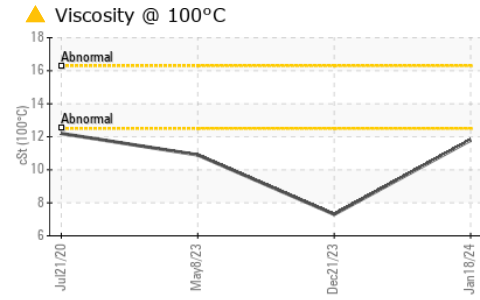
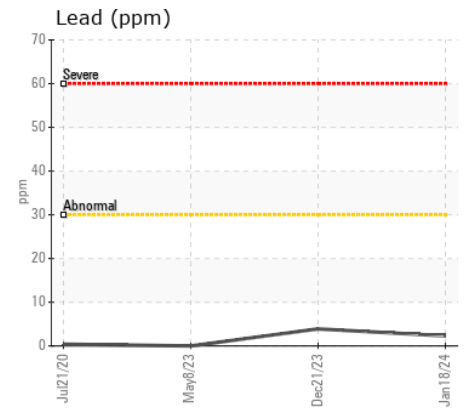
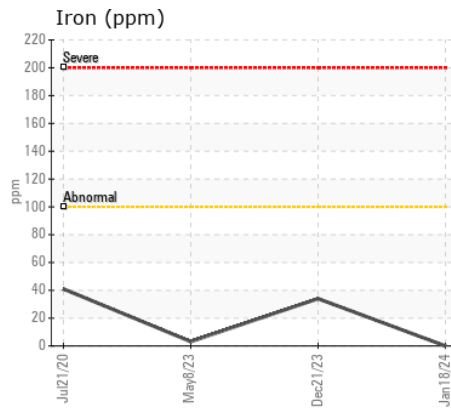
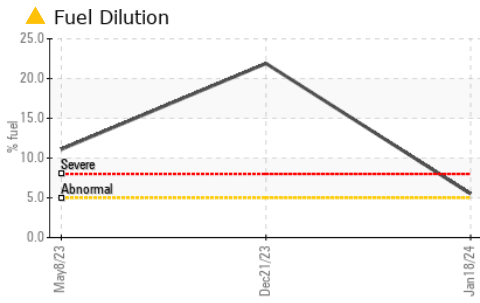
There is a moderate amount of fuel present in the oil.

|                  |          |             |       |              |               |               |
|------------------|----------|-------------|-------|--------------|---------------|---------------|
| Silicon          | ppm      | ASTM D5185m | >60   | <b>3</b>     | 4             | 2             |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>2</b>     | 2             | 1             |
| Fuel             | %        | ASTM D3524  | >5    | <b>▲ 5.5</b> | <b>▲ 21.9</b> | <b>▲ 11.1</b> |
| Water            |          | WC Method   | >0.2  | <b>NEG</b>   | NEG           | NEG           |
| Glycol           |          | WC Method   |       | <b>NEG</b>   | NEG           | NEG           |
| Soot %           | %        | *ASTM D7844 | >3    | <b>0.2</b>   | 0.7           | 0.1           |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>6.2</b>   | 8.2           | 5.6           |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>15.9</b>  | 19.6          | 15.2          |
| Silt             | scalar   | *Visual     | NONE  | <b>NONE</b>  | NONE          | NONE          |
| Debris           | scalar   | *Visual     | NONE  | <b>NONE</b>  | NONE          | NONE          |
| Sand/Dirt        | scalar   | *Visual     | NONE  | <b>NONE</b>  | NONE          | NONE          |
| Appearance       | scalar   | *Visual     | NORML | <b>NORML</b> | NORML         | NORML         |
| Odor             | scalar   | *Visual     | NORML | <b>NORML</b> | NORML         | NORML         |
| Emulsified Water | scalar   | *Visual     | >0.2  | <b>NEG</b>   | NEG           | NEG           |

## FLUID CONDITION

Fuel is present in the oil and is lowering the viscosity.

|                  |          |             |     |               |              |               |
|------------------|----------|-------------|-----|---------------|--------------|---------------|
| Sodium           | ppm      | ASTM D5185m |     | <b>2</b>      | 0            | <1            |
| Boron            | ppm      | ASTM D5185m |     | <b>9</b>      | 1            | 2             |
| Barium           | ppm      | ASTM D5185m |     | <b>0</b>      | 0            | 0             |
| Molybdenum       | ppm      | ASTM D5185m |     | <b>2</b>      | 2            | 2             |
| Manganese        | ppm      | ASTM D5185m |     | <b>&lt;1</b>  | <1           | <1            |
| Magnesium        | ppm      | ASTM D5185m |     | <b>76</b>     | 23           | 30            |
| Calcium          | ppm      | ASTM D5185m |     | <b>2117</b>   | 1521         | 2126          |
| Phosphorus       | ppm      | ASTM D5185m |     | <b>899</b>    | 625          | 800           |
| Zinc             | ppm      | ASTM D5185m |     | <b>1047</b>   | 689          | 1013          |
| Sulfur           | ppm      | ASTM D5185m |     | <b>3610</b>   | 2573         | 4182          |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25 | <b>9.1</b>    | 12.6         | 8.6           |
| Base Number (BN) | mg KOH/g | ASTM D2896  |     | <b>6.9</b>    | 4.0          | 7.1           |
| Visc @ 100°C     | cSt      | ASTM D445   |     | <b>▲ 11.8</b> | <b>▲ 7.3</b> | <b>▲ 10.9</b> |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : DC0028669 **Received** : 26 Feb 2024  
**Lab Number** : 06100673 **Tested** : 28 Feb 2024  
**Unique Number** : 10898903 **Diagnosed** : 28 Feb 2024 - Sean Felton  
**Test Package** : MOB 1 ( Additional Tests: PercentFuel, TBN )

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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