



# LIEBHERR

## OIL ANALYSIS REPORT

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



Machine Id  
**LIEBHERR A934C 057446-1007**  
Component  
**Hydraulic System**  
Fluid  
**KLONDIKE AW 46 (350 LTR)**

### RECOMMENDATION

Resample at the next service interval to monitor. The fluid was specified as KLONDIKE AW 46, however, a fluid match indicates that this fluid is ISO 32 AW Hydraulic Oil. Please confirm the oil type and grade on your next sample.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>LH0281186</b>   | LH0213842   | LH0213847   |
| Sample Date    |     | Client Info |           | <b>22 Jan 2024</b> | 11 Jul 2023 | 24 Apr 2023 |
| Machine Age    | hrs | Client Info |           | <b>26482</b>       | 25673       | 25419       |
| Oil Age        | hrs | Client Info |           | <b>0</b>           | 0           | 0           |
| Filter Age     | hrs | Client Info |           | <b>0</b>           | 0           | 0           |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | Not Changd  | Not Changd  |
| Filter Changed |     | Client Info |           | <b>N/A</b>         | N/A         | N/A         |
| Sample Status  |     |             |           | <b>ABNORMAL</b>    | NORMAL      | NORMAL      |

### WEAR

All component wear rates are normal.

|              |        |               |      |              |      |      |
|--------------|--------|---------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185(m) | >70  | <b>4</b>     | 5    | 9    |
| Chromium     | ppm    | ASTM D5185(m) | >5   | <b>&lt;1</b> | <1   | <1   |
| Nickel       | ppm    | ASTM D5185(m) | >2   | <b>0</b>     | 0    | 0    |
| Titanium     | ppm    | ASTM D5185(m) |      | <b>0</b>     | 0    | 0    |
| Silver       | ppm    | ASTM D5185(m) |      | <b>0</b>     | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185(m) | >2   | <b>&lt;1</b> | <1   | 0    |
| Lead         | ppm    | ASTM D5185(m) | >5   | <b>&lt;1</b> | <1   | <1   |
| Copper       | ppm    | ASTM D5185(m) | >15  | <b>2</b>     | 3    | 6    |
| Tin          | ppm    | ASTM D5185(m) | >2   | <b>0</b>     | 0    | 0    |
| Vanadium     | ppm    | ASTM D5185(m) |      | <b>0</b>     | 0    | 0    |
| White Metal  | scalar | Visual*       | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | Visual*       | NONE | <b>NONE</b>  | NONE | NONE |

### CONTAMINATION

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

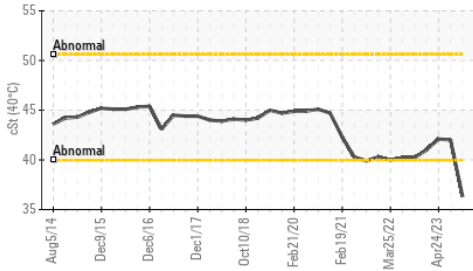
|                  |        |               |           |                 |          |          |
|------------------|--------|---------------|-----------|-----------------|----------|----------|
| Silicon          | ppm    | ASTM D5185(m) | >20       | <b>&lt;1</b>    | <1       | <1       |
| Potassium        | ppm    | ASTM D5185(m) | >20       | <b>&lt;1</b>    | <1       | <1       |
| Water            |        | WC Method     | >0.1      | <b>NEG</b>      | NEG      | NEG      |
| Particles >4µm   |        | ASTM D7647    | >20000    | <b>1302</b>     | 5258     | 4338     |
| Particles >6µm   |        | ASTM D7647    | >5000     | <b>88</b>       | 969      | 595      |
| Particles >14µm  |        | ASTM D7647    | >640      | <b>11</b>       | 77       | 25       |
| Particles >21µm  |        | ASTM D7647    | >160      | <b>3</b>        | 19       | 6        |
| Particles >38µm  |        | ASTM D7647    | >40       | <b>1</b>        | 1        | 1        |
| Particles >71µm  |        | ASTM D7647    | >10       | <b>0</b>        | 0        | 1        |
| Oil Cleanliness  |        | ISO 4406 (c)  | >21/19/16 | <b>18/14/11</b> | 20/17/13 | 19/16/12 |
| 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*       | >0.1      | <b>NEG</b>      | NEG      | NEG      |

### FLUID CONDITION

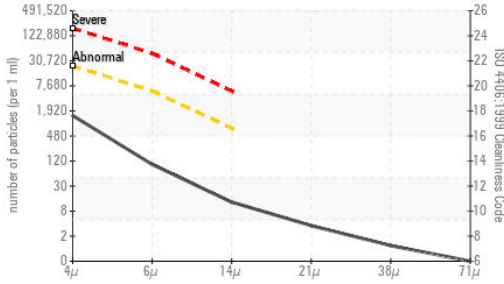
Viscosity of sample indicates oil is within ISO 32 range, advise investigate. The condition of the oil is acceptable for the time in service.

|             |     |               |  |               |      |      |
|-------------|-----|---------------|--|---------------|------|------|
| Sodium      | ppm | ASTM D5185(m) |  | <b>&lt;1</b>  | <1   | <1   |
| Boron       | ppm | ASTM D5185(m) |  | <b>&lt;1</b>  | <1   | <1   |
| Barium      | ppm | ASTM D5185(m) |  | <b>0</b>      | 0    | 0    |
| Molybdenum  | ppm | ASTM D5185(m) |  | <b>&lt;1</b>  | 0    | 0    |
| Manganese   | ppm | ASTM D5185(m) |  | <b>0</b>      | 0    | <1   |
| Magnesium   | ppm | ASTM D5185(m) |  | <b>6</b>      | 2    | 1    |
| Calcium     | ppm | ASTM D5185(m) |  | <b>49</b>     | 56   | 46   |
| Phosphorus  | ppm | ASTM D5185(m) |  | <b>225</b>    | 347  | 381  |
| Zinc        | ppm | ASTM D5185(m) |  | <b>275</b>    | 408  | 426  |
| Sulfur      | ppm | ASTM D5185(m) |  | <b>1093</b>   | 938  | 1008 |
| Visc @ 40°C | cSt | ASTM D7279(m) |  | <b>▲ 36.3</b> | 42.0 | 42.1 |

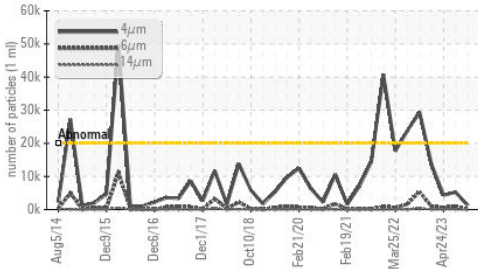
▲ Viscosity @ 40°C



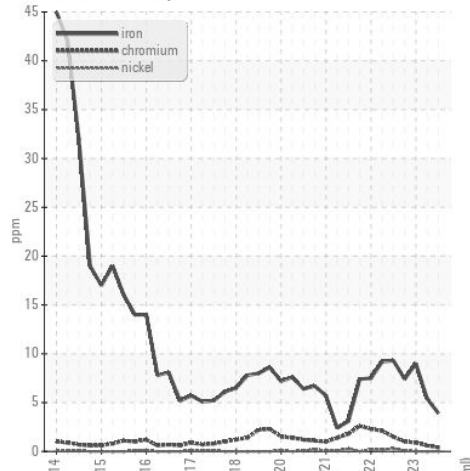
Particle Count



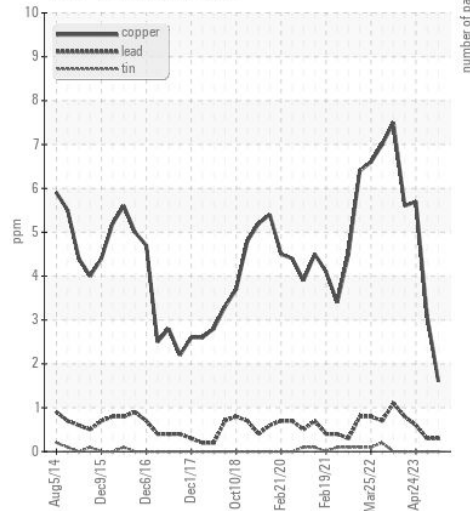
Particle Trend



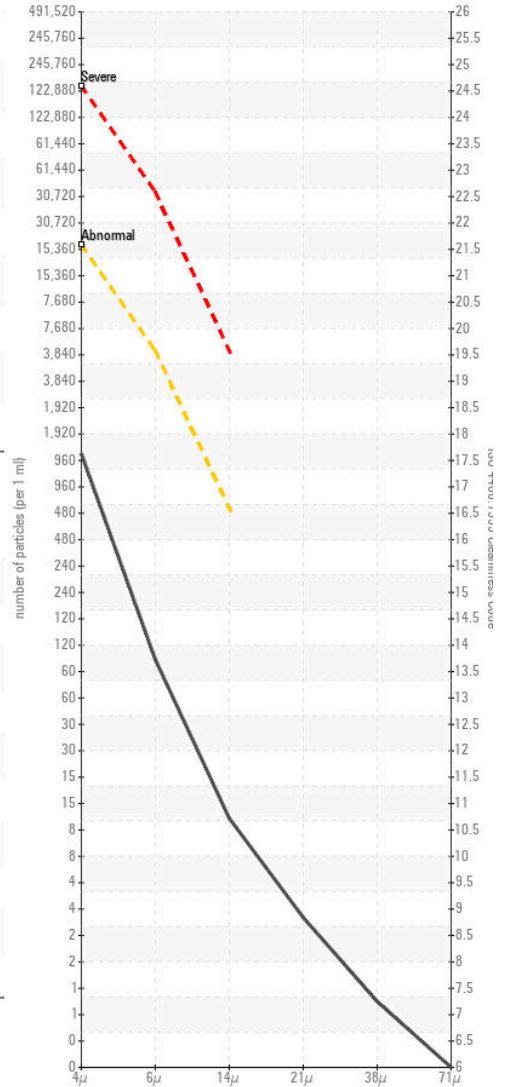
Ferrous Alloys



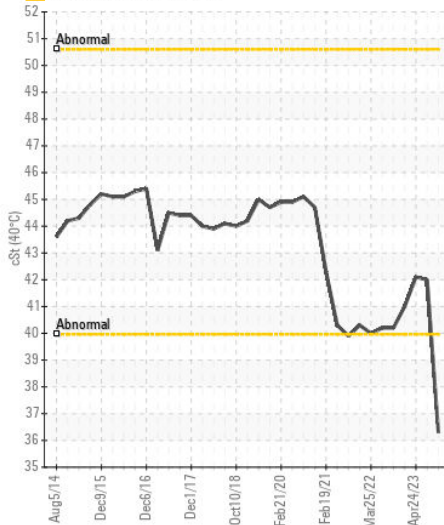
Non-ferrous Metals



Particle Count



▲ Viscosity @ 40°C



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : LH0281186 **Received** : 16 Feb 2024  
**Lab Number** : 02616287 **Tested** : 20 Feb 2024  
**Unique Number** : 5733397 **Diagnosed** : 20 Feb 2024 - Kevin Marson  
**Test Package** : MOB 1 ( Additional Tests: PrtCount )

To discuss this sample report, contact Customer Service at 1-800-268-2131.  
 Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.  
 Validity of results and interpretation are based on the sample and information as supplied.

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