CONST

WEAR CHECK

OIL ANALYSIS REPORT

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

Machine Id
## LIEBHERR 22668
Component
## Hydraulic System
Fluid
## AW HYDRAULIC OIL ISO 68 (20 GAL)

## RECOMMENDATION

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

## WEAR

All component wear rates are normal.

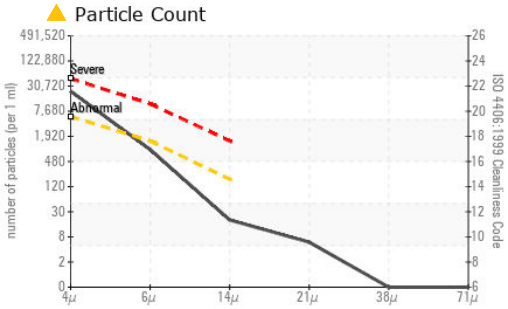
## CONTAMINATION

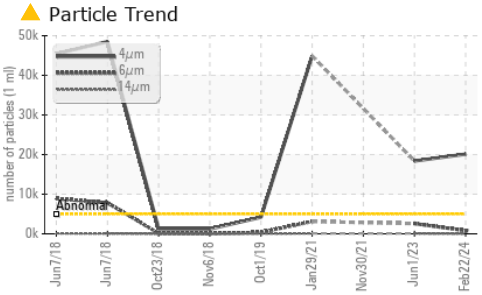
There is a high amount of silt (particulates < 14 microns in size) present in the oil.

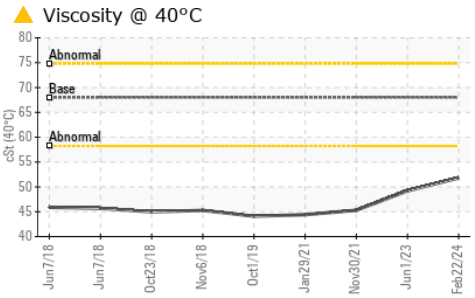
## FLUID CONDITION

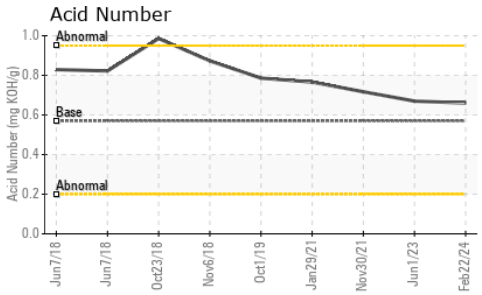
The oil viscosity is lower than normal. Confirm oil type. The AN level is acceptable for this fluid.

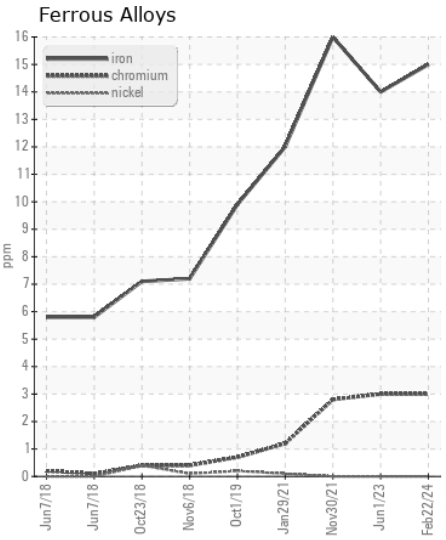
| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0905372** | WC0810123 | LH0204365 |
| Sample Date | | Client Info | | **22 Feb 2024** | 01 Jun 2023 | 30 Nov 2021 |
| Machine Age | hrs | Client Info | | **6986** | 5994 | 4226 |
| Oil Age | hrs | Client Info | | **1000** | 2000 | 4000 |
| Filter Age | hrs | Client Info | | **1000** | 2000 | 1000 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Not Changd |
| Filter Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | ABNORMAL |
| Iron | ppm | ASTM D5185m | >20 | **15** | 14 | 16 |
| Chromium | ppm | ASTM D5185m | >10 | **3** | 3 | 3 |
| Nickel | ppm | ASTM D5185m | >10 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >10 | **7** | 3 | 6 |
| Lead | ppm | ASTM D5185m | >10 | **<1** | 0 | 1 |
| Copper | ppm | ASTM D5185m | >75 | **11** | 11 | 11 |
| Tin | ppm | ASTM D5185m | >10 | **0** | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >20 | **12** | 10 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 0 | <1 |
| Water | | WC Method | >0.1 | **NEG** | NEG | NEG |
| Particles >4µm | | ASTM D7647 | >5000 | ▲ **20111** | ▲ 18376 | --- |
| Particles >6µm | | ASTM D7647 | >1300 | **813** | ▲ 2582 | --- |
| Particles >14µm | | ASTM D7647 | >160 | **17** | 67 | --- |
| Particles >21µm | | ASTM D7647 | >40 | **5** | 17 | --- |
| Particles >38µm | | ASTM D7647 | >10 | **0** | 2 | --- |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | ▲ **22/17/11** | ▲ 21/19/13 | --- |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | ▲ MODER |
| 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 | >0.1 | **NEG** | NEG | NEG |
| Sodium | ppm | ASTM D5185m | | **14** | 14 | 14 |
| Boron | ppm | ASTM D5185m | 5 | **8** | 10 | 0 |
| Barium | ppm | ASTM D5185m | 5 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 5 | **2** | 3 | <1 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 25 | **9** | 13 | 7 |
| Calcium | ppm | ASTM D5185m | 200 | **586** | 777 | 1222 |
| Phosphorus | ppm | ASTM D5185m | 300 | **323** | 345 | 392 |
| Zinc | ppm | ASTM D5185m | 370 | **373** | 385 | 485 |
| Sulfur | ppm | ASTM D5185m | 2500 | **2509** | 3605 | 4548 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.57 | **0.66** | 0.67 | 0.717 |
| Visc @ 40°C | cSt | ASTM D445 | 68 | ▲ **51.8** | ▲ 49.2 | 45.3 |

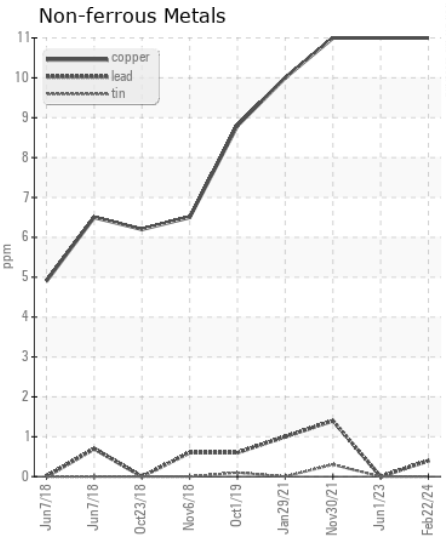


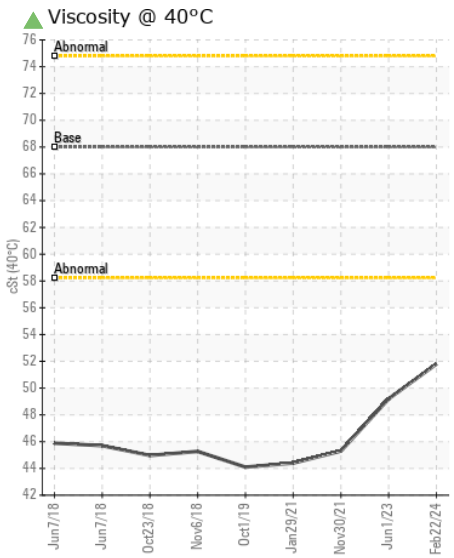



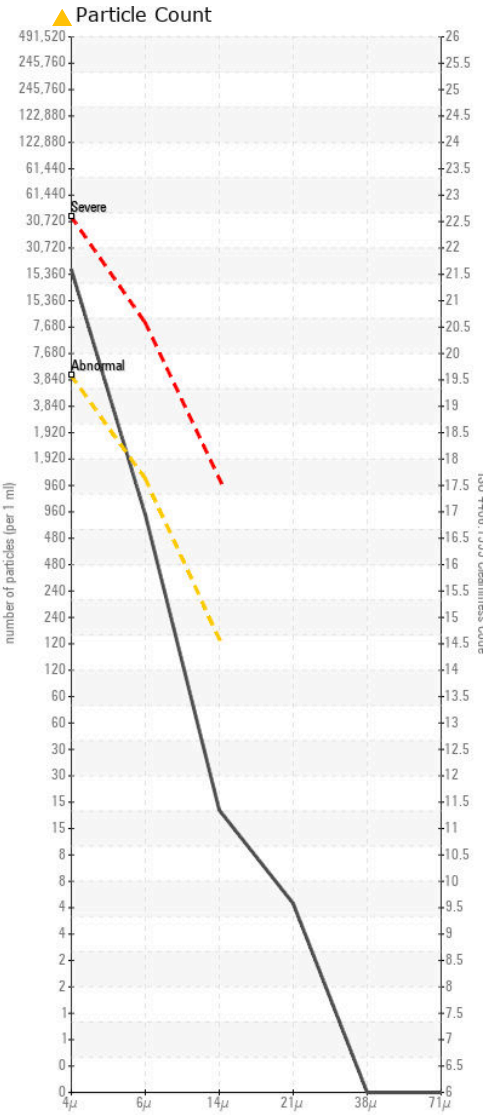



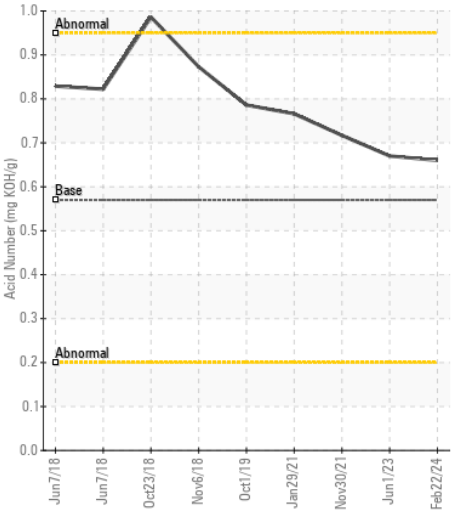




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0905372
**Lab Number** : 06100071
**Unique Number** : 10898301
**Test Package** : CONST

**Received** : 26 Feb 2024
**Tested** : 27 Feb 2024
**Diagnosed** : 27 Feb 2024 - Don Baldridge

**SULLIVAN EASTERN INC-LIEBHERR**
2860 C SLATER RD
MORRISVILLE, NC
US 27560
Contact: CHRIS CALTON

*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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