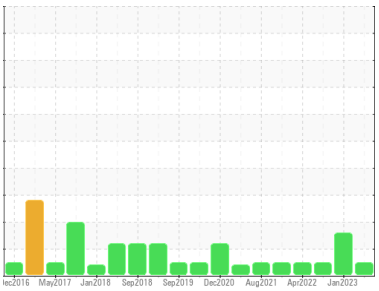
STAUFF FILTRATION TECHNOLOGY

# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## METSO LINDEMAN METSO BALER M HYD
Component
**Hydraulic System**
Fluid
**AW HYDRAULIC OIL ISO 46 (800 GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

**Fluid Condition**
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **ST44451** | ST44832 | ST44242 |
| Sample Date | | Client Info | | **21 Apr 2023** | 19 Jan 2023 | 22 Aug 2022 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | ABNORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >20 | **2** | 2 | 2 |
| Chromium | ppm | ASTM D5185m | >20 | **36** | 38 | 36 |
| Nickel | ppm | ASTM D5185m | >20 | **0** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **<1** | 0 | 0 |
| Lead | ppm | ASTM D5185m | >20 | **0** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >20 | **18** | 20 | 18 |
| Tin | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 5 | **9** | 10 | 10 |
| Barium | ppm | ASTM D5185m | 5 | **0** | 1 | 0 |
| Molybdenum | ppm | ASTM D5185m | 5 | **3** | 3 | 3 |
| Manganese | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Magnesium | ppm | ASTM D5185m | 25 | **13** | 11 | 10 |
| Calcium | ppm | ASTM D5185m | 200 | **92** | 95 | 91 |
| Phosphorus | ppm | ASTM D5185m | 300 | **330** | 326 | 332 |
| Zinc | ppm | ASTM D5185m | 370 | **400** | 405 | 427 |
| Sulfur | ppm | ASTM D5185m | 2500 | **1643** | 1360 | 1230 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >15 | **<1** | 1 | 1 |
| Sodium | ppm | ASTM D5185m | | **3** | 0 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | <1 | <1 |
| Water | % | ASTM D6304 | >0.05 | **0.005** | 0.020 | 0.010 |
| ppm Water | ppm | ASTM D6304 | >500 | **57.3** | 200.1 | 103.7 |

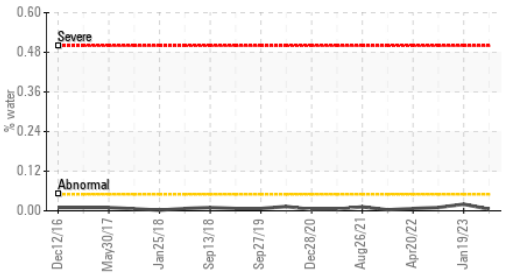
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | | **8064** | 18903 | 14998 |
| Particles >6µm | | ASTM D7647 | >1300 | **805** | ▲ 4698 | 321 |
| Particles >14µm | | ASTM D7647 | >160 | **28** | ▲ 305 | 36 |
| Particles >21µm | | ASTM D7647 | >40 | **9** | ▲ 51 | 12 |
| Particles >38µm | | ASTM D7647 | >10 | **1** | 2 | 1 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >--/17/14 | **20/17/12** | ▲ 21/19/15 | 21/16/12 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.57 | **0.31** | 0.33 | 0.34 |

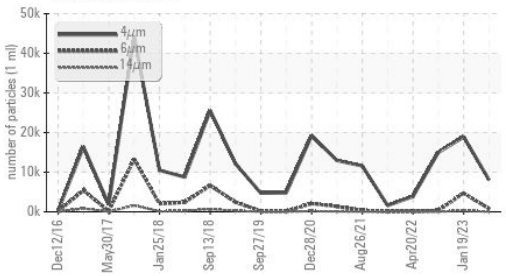
# OIL ANALYSIS REPORT

STAUFF FILTRATION TECHNOLOGY

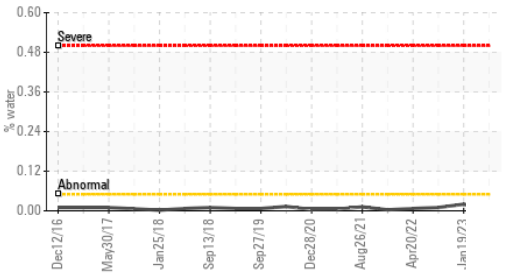
Water



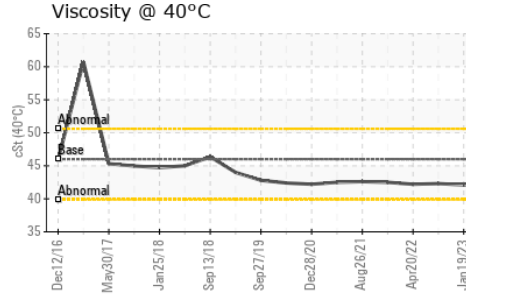

Particle Trend



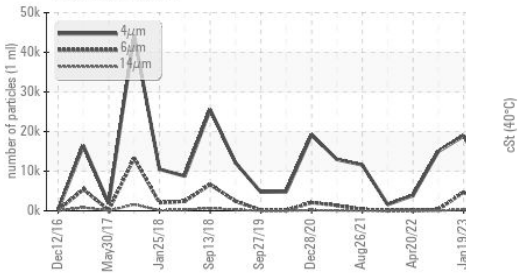

Water




Viscosity @ 40°C



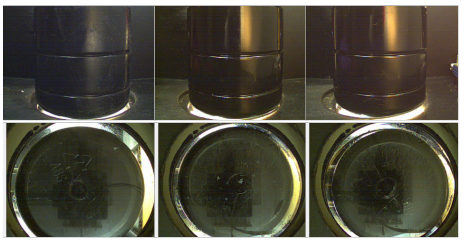

Particle Trend




| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | LIGHT | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | >0.05 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

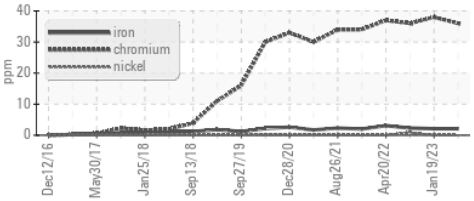
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 46 | **42.4** | 42.1 | 42.3 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |

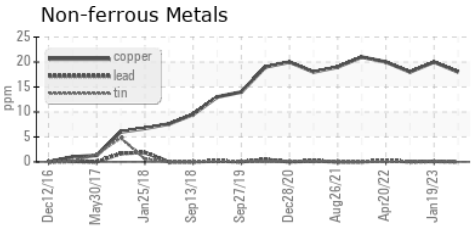


## GRAPHS

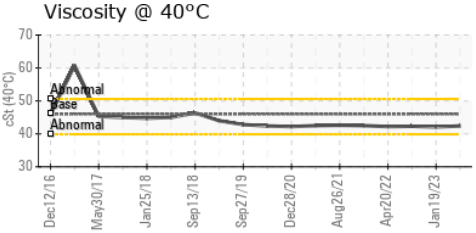
Ferrous Alloys



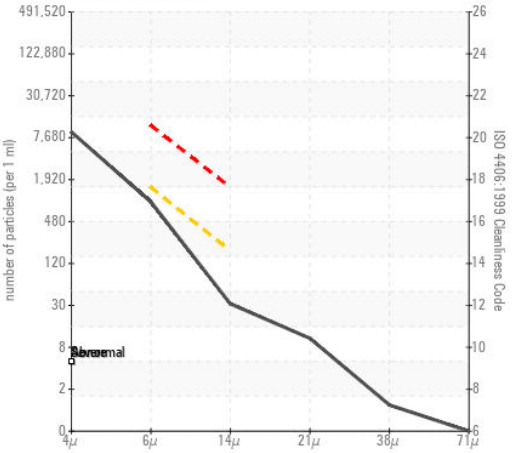

Non-ferrous Metals



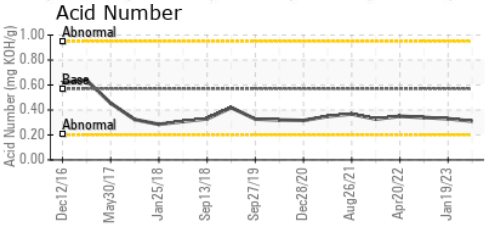

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : ST44451 **Received** : 26 Apr 2023
**Lab Number** : 05830716 **Diagnosed** : 28 Apr 2023
**Unique Number** : 10444209 **Diagnostician** : Don Baldridge
**Test Package** : IND 2 ( Additional Tests: KF )

*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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