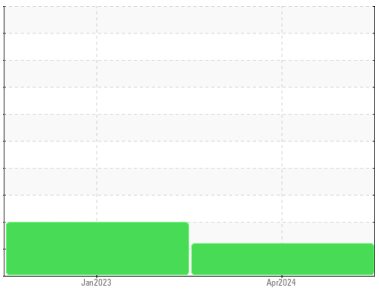
# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Area
## BLACKJACK CREEK [200007683]
Machine Id
## 22WEA88438 - E-02 (S/N 11628070)
Component
**Wind Turbine Gearbox**
Fluid
**FUCHS RENOLIN UNISYN CLP 320 (--- LTR)**

## DIAGNOSIS

**Recommendation**
We recommend you service the filters on this component. Resample at the next service interval to monitor.

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

**Contamination**
There is a high amount of particulates present in the oil.

**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 | | **NX015723** | NX011582 | --- |
| Sample Date | | Client Info | | **26 Apr 2024** | 18 Jan 2023 | --- |
| Machine Age | hrs | Client Info | | **0** | 1379 | --- |
| Oil Age | hrs | Client Info | | **0** | 0 | --- |
| Oil Changed | | Client Info | | **N/A** | N/A | --- |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184 | >40 | **19** | 10 | --- |
| Iron | ppm | ASTM D5185m | >55 | **43** | 22 | --- |
| Chromium | ppm | ASTM D5185m | >2 | **<1** | 0 | --- |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | 0 | --- |
| Titanium | ppm | ASTM D5185m | >10 | **<1** | 0 | --- |
| Silver | ppm | ASTM D5185m | | **0** | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >15 | **2** | 0 | --- |
| Lead | ppm | ASTM D5185m | >3 | **3** | 0 | --- |
| Copper | ppm | ASTM D5185m | >7 | **<1** | 0 | --- |
| Tin | ppm | ASTM D5185m | >3 | **0** | 0 | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **3** | 3 | --- |
| Barium | ppm | ASTM D5185m | | **<1** | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | | **0** | 0 | --- |
| Manganese | ppm | ASTM D5185m | | **1** | <1 | --- |
| Magnesium | ppm | ASTM D5185m | | **<1** | 0 | --- |
| Calcium | ppm | ASTM D5185m | | **14** | 19 | --- |
| Phosphorus | ppm | ASTM D5185m | | **218** | 213 | --- |
| Zinc | ppm | ASTM D5185m | | **15** | 0 | --- |
| Sulfur | ppm | ASTM D5185m | | **4693** | 5295 | --- |

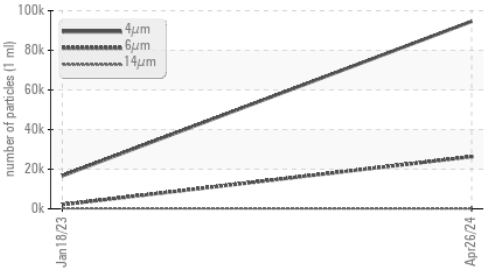
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >35 | **18** | 9 | --- |
| Sodium | ppm | ASTM D5185m | | **2** | 1 | --- |
| Potassium | ppm | ASTM D5185m | >20 | **2** | 0 | --- |
| Water | % | ASTM D6304 | >0.02 | **0.002** | 0.005 | --- |
| ppm Water | ppm | ASTM D6304 | >200 | **19** | 57.3 | --- |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | | **94612** | 16658 | --- |
| Particles >6µm | | ASTM D7647 | >320 | ▲ **26296** | ▲ 2087 | --- |
| Particles >14µm | | ASTM D7647 | >40 | ▲ **169** | ▲ 260 | --- |
| Particles >21µm | | ASTM D7647 | >10 | **7** | ▲ 81 | --- |
| Particles >38µm | | ASTM D7647 | >3 | **0** | ▲ 10 | --- |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 1 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >--/15/12 | ▲ **24/22/15** | ▲ 21/18/15 | --- |

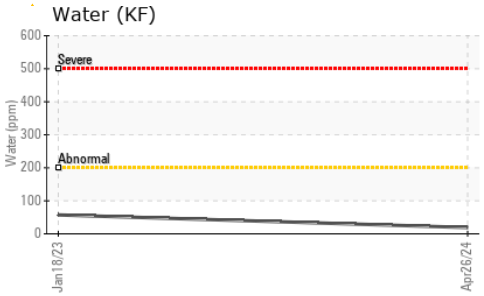
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.6 | **0.49** | 0.38 | --- |

# OIL ANALYSIS REPORT

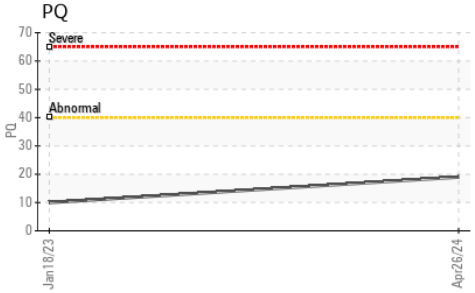
Particle Trend



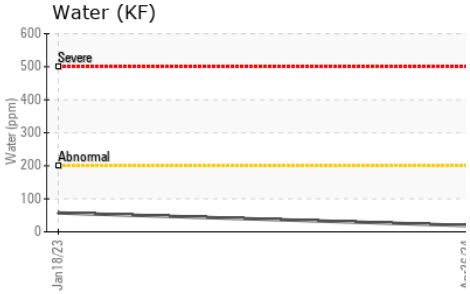

Water (KF)



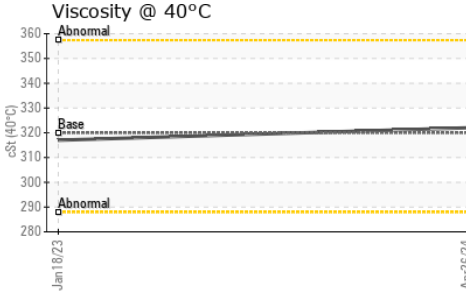

PQ




Water (KF)

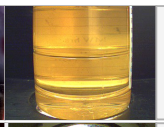
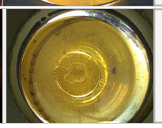



Viscosity @ 40°C



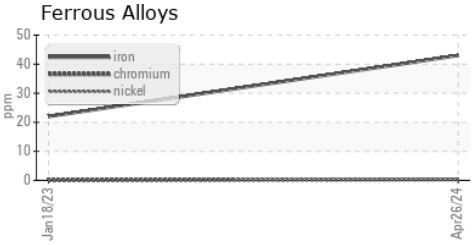

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **LIGHT** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Debris | scalar | *Visual | NONE | **LIGHT** | LIGHT | --- |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Appearance | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Emulsified Water | scalar | *Visual | >0.02 | **NEG** | NEG | --- |
| Free Water | scalar | *Visual | | **NEG** | NEG | --- |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 320 | **322** | 317 | --- |

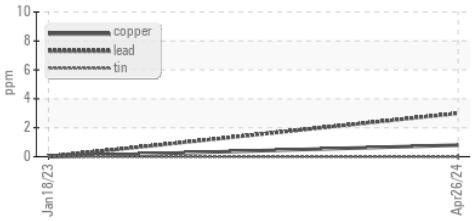
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  |  | *no image* |
| Bottom | | |  |  | *no image* |

## GRAPHS

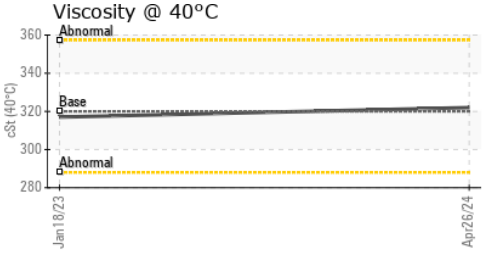
Ferrous Alloys



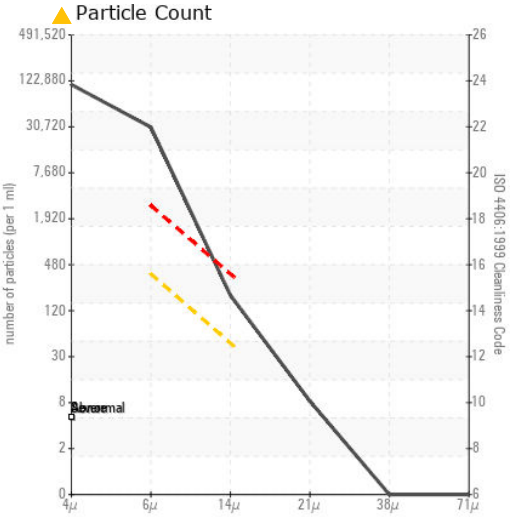

Non-ferrous Metals



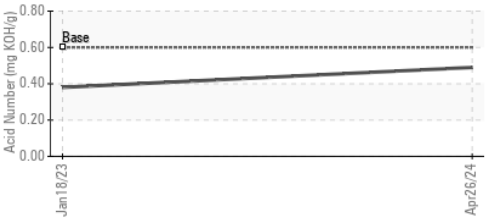

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : NX015723
**Lab Number** : 06210772
**Unique Number** : 11083636
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**Received** : 14 Jun 2024
**Tested** : 18 Jun 2024
**Diagnosed** : 18 Jun 2024 - Angela Borella

*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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