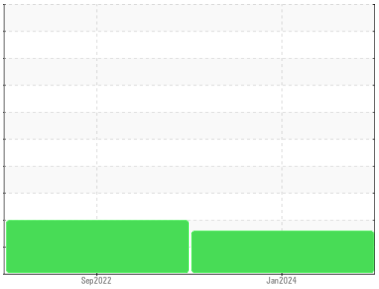
# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Area
## BLACKJACK CREEK [700007683]
Machine Id
## WEA88415 - C-02 (S/N 122435)
Component
**Wind Turbine Gearbox**
Fluid
**FUCHS RENOLIN UNISYN CKC ISO 320 (--- LTR)**

## DIAGNOSIS

**Recommendation**
We recommend you service the filters on this component if applicable. 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 | | **NX011522** | NX011531 | --- |
| Sample Date | | Client Info | | **29 Jan 2024** | 15 Sep 2022 | --- |
| Machine Age | hrs | Client Info | | **0** | 0 | --- |
| 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 | **23** | 14 | --- |
| Iron | ppm | ASTM D5185m | >55 | **35** | 21 | --- |
| Chromium | ppm | ASTM D5185m | >2 | **0** | 0 | --- |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 0 | --- |
| Titanium | ppm | ASTM D5185m | >10 | **0** | 0 | --- |
| Silver | ppm | ASTM D5185m | | **0** | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >15 | **0** | 0 | --- |
| Lead | ppm | ASTM D5185m | >3 | **<1** | <1 | --- |
| Copper | ppm | ASTM D5185m | >7 | **<1** | <1 | --- |
| 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 | 25 | **6** | 6 | --- |
| Barium | ppm | ASTM D5185m | | **0** | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | | **0** | 0 | --- |
| Manganese | ppm | ASTM D5185m | | **1** | <1 | --- |
| Magnesium | ppm | ASTM D5185m | | **0** | <1 | --- |
| Calcium | ppm | ASTM D5185m | 17 | **74** | 20 | --- |
| Phosphorus | ppm | ASTM D5185m | 200 | **179** | 215 | --- |
| Zinc | ppm | ASTM D5185m | | **15** | 4 | --- |
| Sulfur | ppm | ASTM D5185m | 5000 | **4730** | 4540 | --- |

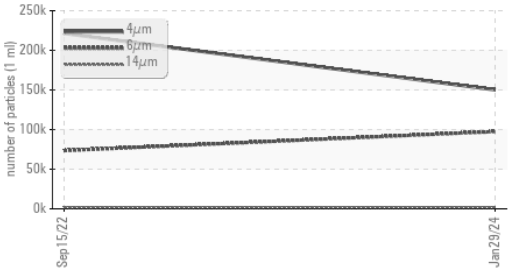
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >35 | **8** | 8 | --- |
| Sodium | ppm | ASTM D5185m | | **2** | 0 | --- |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 2 | --- |
| Water | % | ASTM D6304 | >0.02 | **0.008** | 0.006 | --- |
| ppm Water | ppm | ASTM D6304 | >200 | **86** | 69.9 | --- |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | | **150139** | ▲ 221354 | --- |
| Particles >6µm | | ASTM D7647 | >320 | ▲ **97439** | ▲ 73526 | --- |
| Particles >14µm | | ASTM D7647 | >40 | ▲ **1840** | ▲ 1709 | --- |
| Particles >21µm | | ASTM D7647 | >10 | ▲ **28** | ▲ 162 | --- |
| Particles >38µm | | ASTM D7647 | >3 | **1** | 3 | --- |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >--/15/12 | ▲ **24/24/18** | ▲ 25/23/18 | --- |

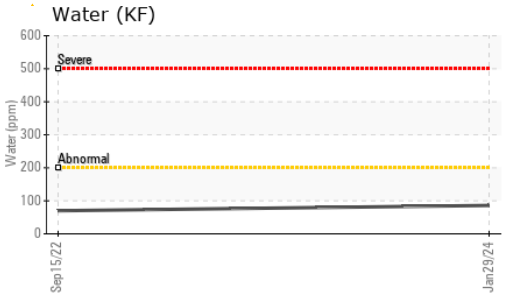
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.9 | **0.39** | 0.39 | --- |

# OIL ANALYSIS REPORT

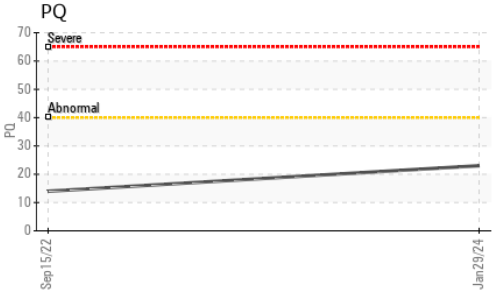
Particle Trend



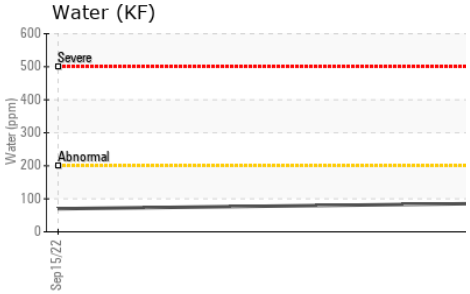

Water (KF)



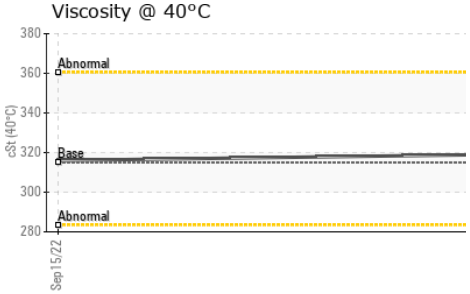

PQ




Water (KF)




Viscosity @ 40°C



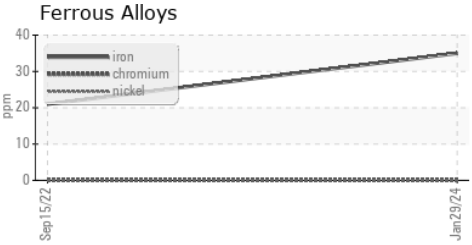

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Debris | scalar | *Visual | NONE | **NONE** | 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 | 315 | **319** | 316 | --- |

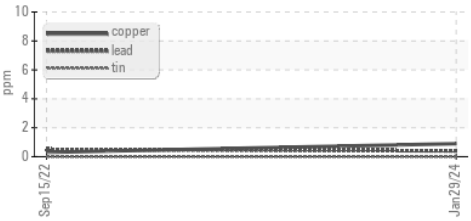
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  |  | *no image* |
| Bottom | | |  |  | *no image* |

## GRAPHS

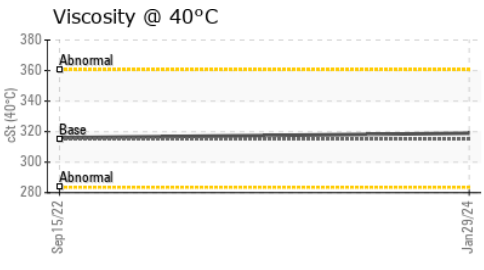
Ferrous Alloys



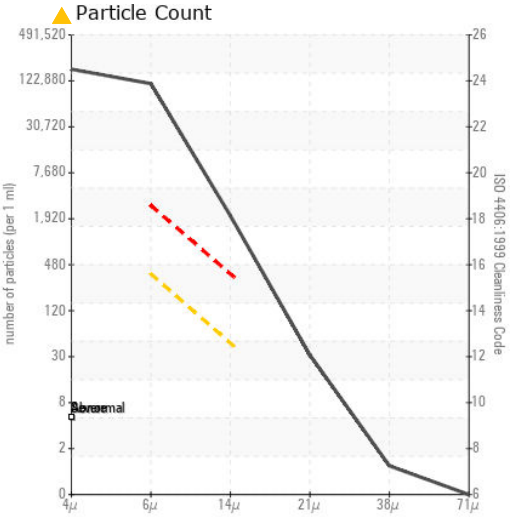

Non-ferrous Metals



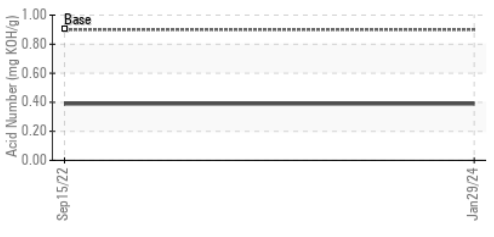

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : NX011522 **Recieved** : 30 Jan 2024
**Lab Number** : 06073847 **Diagnosed** : 31 Jan 2024
**Unique Number** : 10855938 **Diagnostician** : Don Baldridge
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

*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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