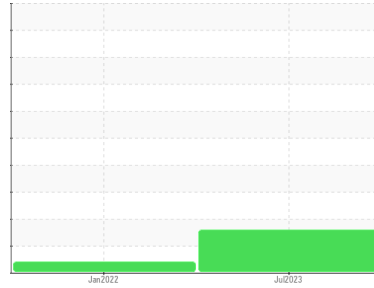




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
MARYNEAL [200006807]
 Machine Id
87021 SITE 2

Component
Wind Turbine Gearbox
 Fluid
FUCHS RENOLIN UNISYN CLP 320 (650 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 | NX06054855 | NX009278 | --- |
| Sample Date | Client Info | 26 Jul 2023 | 10 Jan 2022 | --- |
| Machine Age | hrs | Client Info | 0 | --- |
| Oil Age | hrs | Client Info | 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 | 12 | 16 | --- |
| Iron | ppm ASTM D5185m >55 | 5 | 14 | --- |
| Chromium | ppm ASTM D5185m >2 | 0 | <1 | --- |
| Nickel | ppm ASTM D5185m >2 | 0 | 0 | --- |
| Titanium | ppm ASTM D5185m >10 | 0 | 0 | --- |
| Silver | ppm ASTM D5185m | 0 | <1 | --- |
| Aluminum | ppm ASTM D5185m >15 | 0 | 11 | --- |
| Lead | ppm ASTM D5185m >3 | 2 | <1 | --- |
| Copper | ppm ASTM D5185m >7 | <1 | <1 | --- |
| Tin | ppm ASTM D5185m >3 | 0 | <1 | --- |
| Antimony | ppm ASTM D5185m >3 | --- | 0 | --- |
| Vanadium | ppm ASTM D5185m | 0 | 0 | --- |
| Cadmium | ppm ASTM D5185m | 0 | 0 | --- |

ADDITIVES

| method | limit/base | current | history1 | history2 |
|------------|-----------------|-------------|----------|----------|
| Boron | ppm ASTM D5185m | 4 | 8 | --- |
| Barium | ppm ASTM D5185m | 0 | 0 | --- |
| Molybdenum | ppm ASTM D5185m | 0 | 0 | --- |
| Manganese | ppm ASTM D5185m | 0 | <1 | --- |
| Magnesium | ppm ASTM D5185m | 0 | 0 | --- |
| Calcium | ppm ASTM D5185m | 10 | 19 | --- |
| Phosphorus | ppm ASTM D5185m | 177 | 206 | --- |
| Zinc | ppm ASTM D5185m | 0 | 0 | --- |
| Sulfur | ppm ASTM D5185m | 4489 | 4093 | --- |

CONTAMINANTS

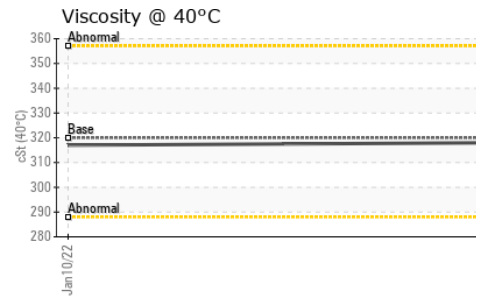
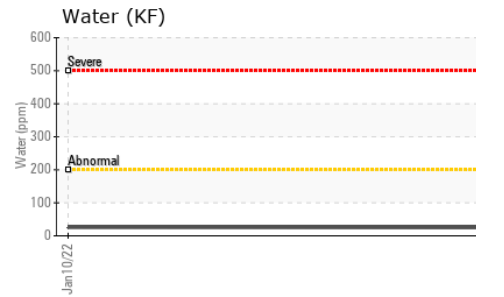
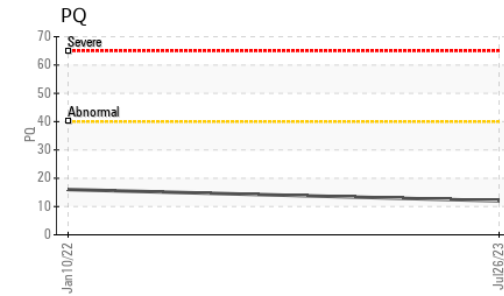
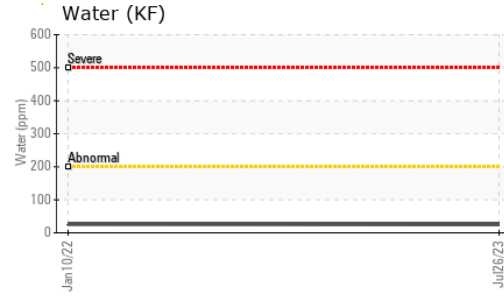
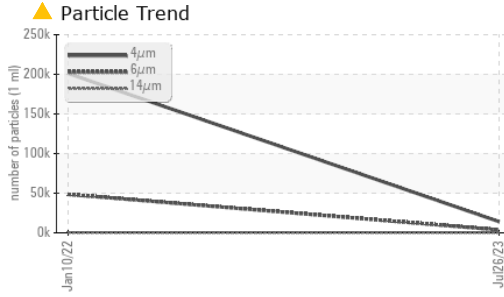
| method | limit/base | current | history1 | history2 |
|-----------|---------------------|--------------|----------|----------|
| Silicon | ppm ASTM D5185m >35 | 16 | 10 | --- |
| Sodium | ppm ASTM D5185m | 4 | 0 | --- |
| Potassium | ppm ASTM D5185m >20 | 0 | <1 | --- |
| Water | % ASTM D6304 >0.02 | 0.002 | 0.003 | --- |
| ppm Water | ppm ASTM D6304 >200 | 25 | 25.7 | --- |

FLUID CLEANLINESS

| method | limit/base | current | history1 | history2 |
|-----------------|------------------------|-------------------|------------|----------|
| Particles >4µm | ASTM D7647 | 14074 | 201157 | --- |
| Particles >6µm | ASTM D7647 >320 | ▲ 3680 | ▲ 48496 | --- |
| Particles >14µm | ASTM D7647 >40 | ▲ 283 | 235 | --- |
| Particles >21µm | ASTM D7647 >10 | ▲ 54 | 33 | --- |
| Particles >38µm | ASTM D7647 >3 | 1 | 0 | --- |
| Particles >71µm | ASTM D7647 >3 | 0 | 0 | --- |
| Oil Cleanliness | ISO 4406 (c) >--/15/12 | ▲ 21/19/15 | ▲ 25/23/15 | --- |



OIL ANALYSIS REPORT

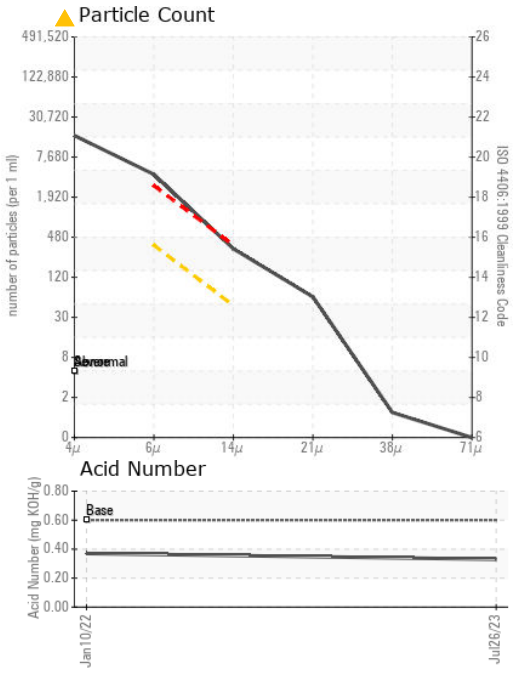
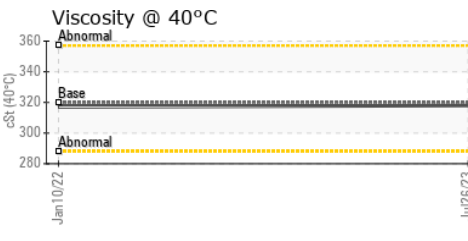
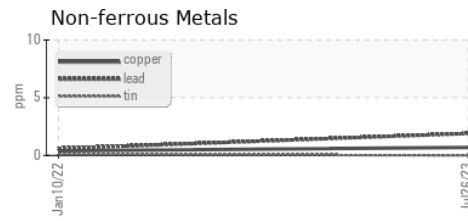
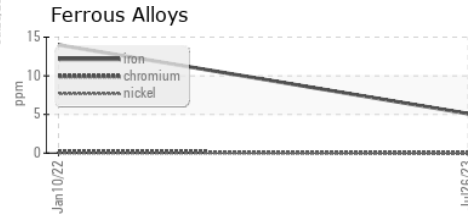


| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|------------|------------|--------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.6 | 0.33 | 0.37 | --- |
| VISUAL | | method | limit/base | current | history1 | 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 | 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 | 318 | 317 | --- |

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

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX06054855 **Received** : 08 Jan 2024
Lab Number : 06054855 **Diagnosed** : 10 Jan 2024
Unique Number : 10820804 **Diagnostician** : Don Baldrige
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - Chicago
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 CHICAGO, IL
 US 60606
 Contact: DEVIN LINEHAN
 DLinehan@nordex-online.com
 T: (312)386-4124
 F: (312)386-7102

Certificate L2367
 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)