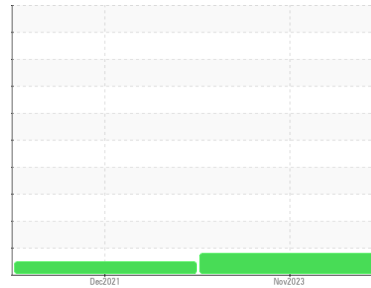




# OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area  
**MARYNEAL [200006807]**  
 Machine Id  
**87044 SITE 17**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**FUCHS RENOLIN CLP ISO 320 (650 LTR)**

## DIAGNOSIS

### Recommendation

No corrective action is recommended at this time. 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 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 |             | <b>NX06054877</b>  | NX009524    | ---      |
| Sample Date   | Client Info |             | <b>15 Nov 2023</b> | 28 Dec 2021 | ---      |
| Machine Age   | hrs         | Client Info | <b>0</b>           | 0           | ---      |
| Oil Age       | hrs         | Client Info | <b>0</b>           | 0           | ---      |
| Oil Changed   | Client Info |             | <b>N/A</b>         | N/A         | ---      |
| Sample Status |             |             | <b>ABNORMAL</b>    | NORMAL      | ---      |

## WEAR METALS

|          | method     | limit/base  | current   | history1  | history2 |
|----------|------------|-------------|-----------|-----------|----------|
| PQ       | ASTM D8184 | >80         | <b>15</b> | 15        | ---      |
| Iron     | ppm        | ASTM D5185m | >150      | <b>10</b> | 8        |
| Chromium | ppm        | ASTM D5185m | >5        | <b>0</b>  | <1       |
| Nickel   | ppm        | ASTM D5185m | >10       | <b>0</b>  | 0        |
| Titanium | ppm        | ASTM D5185m | >10       | <b>0</b>  | 0        |
| Silver   | ppm        | ASTM D5185m |           | <b>0</b>  | <1       |
| Aluminum | ppm        | ASTM D5185m | >10       | <b>0</b>  | <1       |
| Lead     | ppm        | ASTM D5185m | >20       | <b>0</b>  | <1       |
| Copper   | ppm        | ASTM D5185m | >50       | <b>0</b>  | <1       |
| Tin      | ppm        | ASTM D5185m | >3        | <b>0</b>  | <1       |
| Antimony | ppm        | ASTM D5185m | >3        | ---       | 0        |
| Vanadium | ppm        | ASTM D5185m |           | <b>0</b>  | 0        |
| Cadmium  | ppm        | ASTM D5185m |           | <b>0</b>  | 0        |

## ADDITIVES

|            | method | limit/base  | current | history1    | history2 |
|------------|--------|-------------|---------|-------------|----------|
| Boron      | ppm    | ASTM D5185m |         | <b>6</b>    | 9        |
| Barium     | ppm    | ASTM D5185m |         | <b>0</b>    | 0        |
| Molybdenum | ppm    | ASTM D5185m |         | <b>0</b>    | 0        |
| Manganese  | ppm    | ASTM D5185m |         | <b>0</b>    | <1       |
| Magnesium  | ppm    | ASTM D5185m |         | <b>0</b>    | 0        |
| Calcium    | ppm    | ASTM D5185m |         | <b>11</b>   | 16       |
| Phosphorus | ppm    | ASTM D5185m |         | <b>173</b>  | 195      |
| Zinc       | ppm    | ASTM D5185m |         | <b>0</b>    | 0        |
| Sulfur     | ppm    | ASTM D5185m |         | <b>4318</b> | 4097     |

## CONTAMINANTS

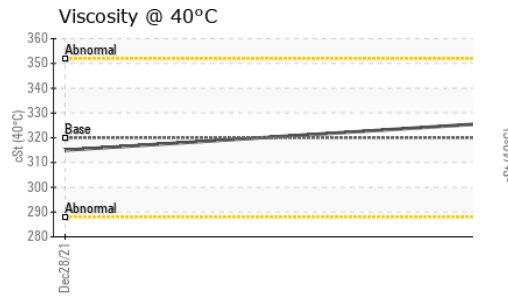
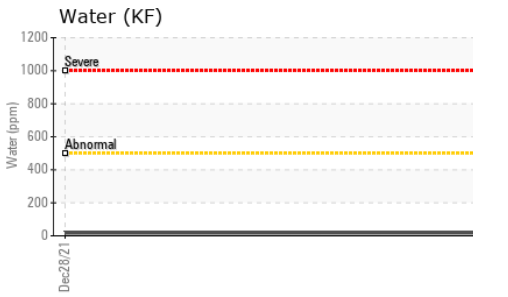
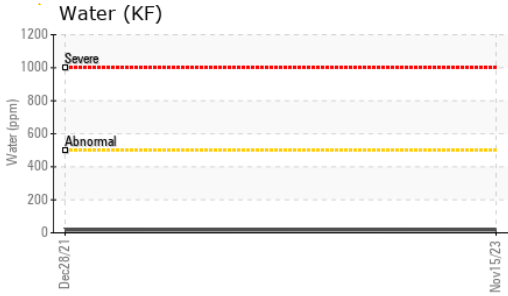
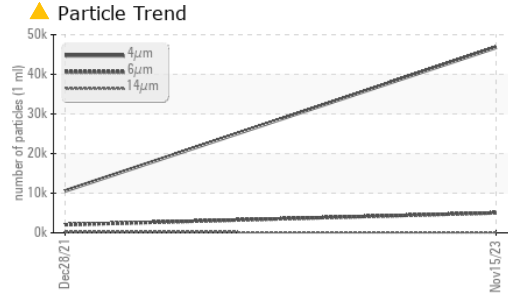
|           | method | limit/base  | current | history1     | history2 |
|-----------|--------|-------------|---------|--------------|----------|
| Silicon   | ppm    | ASTM D5185m | >50     | <b>16</b>    | 11       |
| Sodium    | ppm    | ASTM D5185m | >20     | <b>4</b>     | 0        |
| Potassium | ppm    | ASTM D5185m | >20     | <b>0</b>     | 0        |
| Water     | %      | ASTM D6304  | >0.05   | <b>0.002</b> | 0.002    |
| ppm Water | ppm    | ASTM D6304  | >500    | <b>18</b>    | 17.2     |

## FLUID CLEANLINESS

|                 | method       | limit/base | current         | history1 | history2 |
|-----------------|--------------|------------|-----------------|----------|----------|
| Particles >4µm  | ASTM D7647   |            | <b>46780</b>    | 10574    | ---      |
| Particles >6µm  | ASTM D7647   | >2500      | <b>5034</b>     | 2042     | ---      |
| Particles >14µm | ASTM D7647   | >320       | <b>122</b>      | 164      | ---      |
| Particles >21µm | ASTM D7647   | >80        | <b>26</b>       | 39       | ---      |
| Particles >38µm | ASTM D7647   | >20        | <b>0</b>        | 0        | ---      |
| Particles >71µm | ASTM D7647   | >4         | <b>0</b>        | 0        | ---      |
| Oil Cleanliness | ISO 4406 (c) | >--/18/15  | <b>23/20/14</b> | 21/18/15 | ---      |



# OIL ANALYSIS REPORT

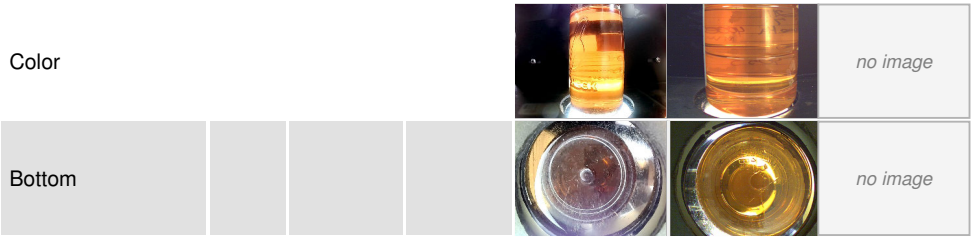


| FLUID DEGRADATION |          | method     | limit/base | current     | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN)  | mg KOH/g | ASTM D8045 |            | <b>0.35</b> | 0.46     | ---      |

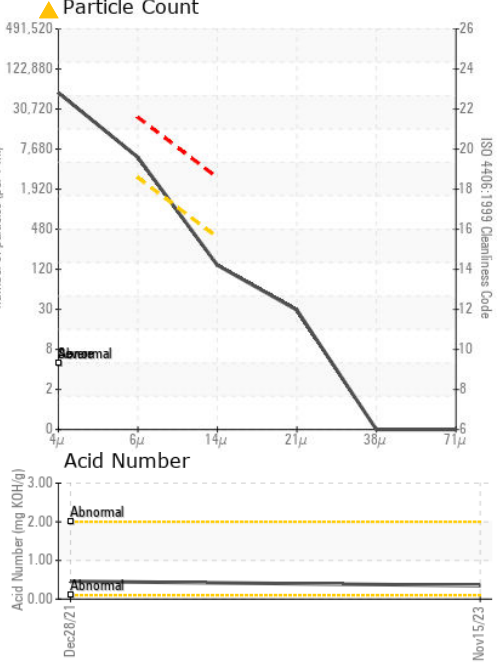
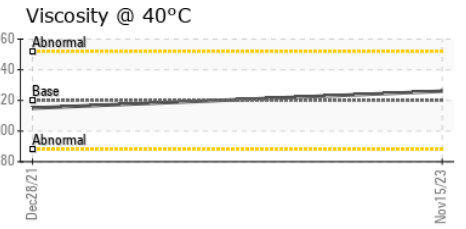
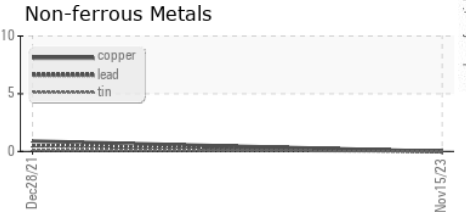
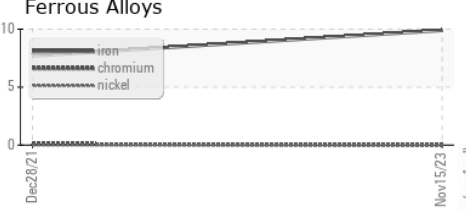
| VISUAL           |        | method  | limit/base | current      | history1 | history2 |
|------------------|--------|---------|------------|--------------|----------|----------|
| White Metal      | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | ---      |
| Yellow Metal     | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | ---      |
| Precipitate      | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | ---      |
| Silt             | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | ---      |
| Debris           | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | ---      |
| Sand/Dirt        | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | ---      |
| Appearance       | scalar | *Visual | NORML      | <b>NORML</b> | NORML    | ---      |
| Odor             | scalar | *Visual | NORML      | <b>NORML</b> | NORML    | ---      |
| Emulsified Water | scalar | *Visual | >0.05      | <b>NEG</b>   | NEG      | ---      |
| Free Water       | scalar | *Visual |            | <b>NEG</b>   | NEG      | ---      |

| FLUID PROPERTIES |     | method    | limit/base | current    | history1 | history2 |
|------------------|-----|-----------|------------|------------|----------|----------|
| Visc @ 40°C      | cSt | ASTM D445 | 320        | <b>326</b> | 315      | ---      |

### SAMPLE IMAGES



### GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX06054877 **Received** : 08 Jan 2024  
**Lab Number** : **06054877** **Diagnosed** : 10 Jan 2024  
**Unique Number** : 10820826 **Diagnostician** : Don Baldrige  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - Chicago**  
 300 SOUTH WACKER DRIVE, SUITE 1500  
 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)