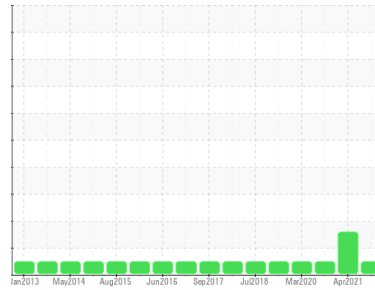




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id  
**TURBINA 04 (S/N 101282)**

Component  
**Wind Turbine Gearbox**

Fluid  
**FUCHS RENOLIN CLP ISO 320 (320 LTR)**

## 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 |             |            | <b>WC05582424</b>  | WC05279173  | WC0419915   |
| Sample Date        | Client Info |             |            | <b>05 Apr 2022</b> | 30 Apr 2021 | 04 May 2020 |
| Machine Age        | yrs         | Client Info |            | <b>72</b>          | 108         | 60          |
| Oil Age            | yrs         | Client Info |            | <b>0</b>           | 57          | 0           |
| Oil Changed        | Client Info |             |            | <b>N/A</b>         | N/A         | N/A         |
| Sample Status      |             |             |            | <b>NORMAL</b>      | MARGINAL    | NORMAL      |

| WEAR METALS |     | method      | limit/base | current      | history1 | history2 |
|-------------|-----|-------------|------------|--------------|----------|----------|
| PQ          |     | ASTM D8184  | >50        | <b>19</b>    | 21       | 14       |
| Iron        | ppm | ASTM D5185m | >30        | <b>26</b>    | 35       | 29       |
| Chromium    | ppm | ASTM D5185m | >3         | <b>&lt;1</b> | <1       | <1       |
| Nickel      | ppm | ASTM D5185m | >3         | <b>0</b>     | 0        | 0        |
| Titanium    | ppm | ASTM D5185m | >10        | <b>0</b>     | 0        | 0        |
| Silver      | ppm | ASTM D5185m |            | <b>0</b>     | 0        | 0        |
| Aluminum    | ppm | ASTM D5185m | >30        | <b>&lt;1</b> | 0        | 0        |
| Lead        | ppm | ASTM D5185m | >15        | <b>&lt;1</b> | <1       | 1        |
| Copper      | ppm | ASTM D5185m | >10        | <b>&lt;1</b> | <1       | <1       |
| Tin         | ppm | ASTM D5185m |            | <b>0</b>     | <1       | <1       |
| Antimony    | ppm | ASTM D5185m |            | <b>---</b>   | 0        | 0        |
| Vanadium    | ppm | ASTM D5185m |            | <b>0</b>     | 0        | 0        |
| Cadmium     | ppm | ASTM D5185m |            | <b>0</b>     | 0        | 0        |

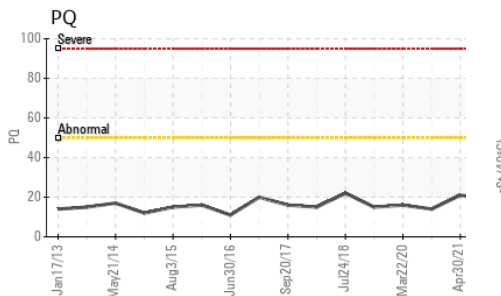
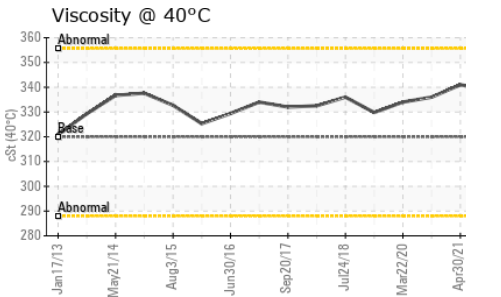
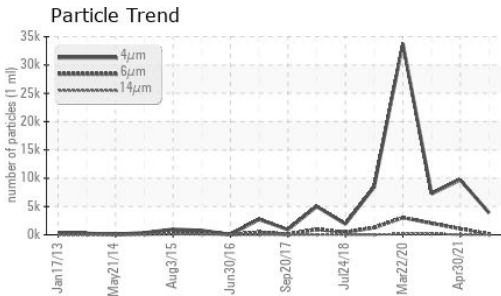
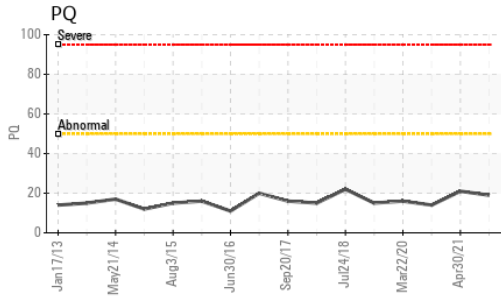
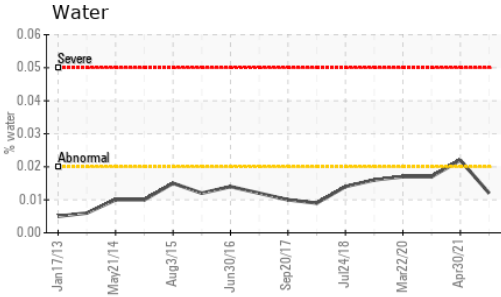
| ADDITIVES  |     | method      | limit/base | current     | history1 | history2 |
|------------|-----|-------------|------------|-------------|----------|----------|
| Boron      | ppm | ASTM D5185m |            | <b>0</b>    | 2        | <1       |
| Barium     | ppm | ASTM D5185m |            | <b>0</b>    | 0        | 0        |
| Molybdenum | ppm | ASTM D5185m |            | <b>0</b>    | 0        | 0        |
| Manganese  | ppm | ASTM D5185m |            | <b>0</b>    | <1       | <1       |
| Magnesium  | ppm | ASTM D5185m |            | <b>0</b>    | 0        | <1       |
| Calcium    | ppm | ASTM D5185m |            | <b>4</b>    | 9        | 16       |
| Phosphorus | ppm | ASTM D5185m |            | <b>135</b>  | 190      | 197      |
| Zinc       | ppm | ASTM D5185m |            | <b>87</b>   | 132      | 93       |
| Sulfur     | ppm | ASTM D5185m |            | <b>3207</b> | 3487     | 4008     |

| CONTAMINANTS |     | method      | limit/base | current      | history1 | history2 |
|--------------|-----|-------------|------------|--------------|----------|----------|
| Silicon      | ppm | ASTM D5185m | >+15       | <b>&lt;1</b> | <1       | <1       |
| Sodium       | ppm | ASTM D5185m |            | <b>1</b>     | 3        | 4        |
| Potassium    | ppm | ASTM D5185m | >20        | <b>0</b>     | <1       | <1       |
| Water        | %   | ASTM D6304  | >0.02      | <b>0.012</b> | ▲ 0.022  | 0.017    |
| ppm Water    | ppm | ASTM D6304  | >200       | <b>127.4</b> | ▲ 224.1  | 178.3    |

| FLUID CLEANLINESS |  | method       | limit/base | current         | history1 | history2 |
|-------------------|--|--------------|------------|-----------------|----------|----------|
| Particles >4µm    |  | ASTM D7647   |            | <b>3862</b>     | 9697     | 7257     |
| Particles >6µm    |  | ASTM D7647   | >5000      | <b>133</b>      | 1058     | 2043     |
| Particles >14µm   |  | ASTM D7647   | >640       | <b>7</b>        | 27       | 189      |
| Particles >21µm   |  | ASTM D7647   | >160       | <b>3</b>        | 8        | 58       |
| Particles >38µm   |  | ASTM D7647   | >40        | <b>0</b>        | 0        | 4        |
| Particles >71µm   |  | ASTM D7647   | >10        | <b>0</b>        | 0        | 1        |
| Oil Cleanliness   |  | ISO 4406 (c) | >--/19/16  | <b>19/14/10</b> | 20/17/12 | 20/18/15 |



# OIL ANALYSIS REPORT

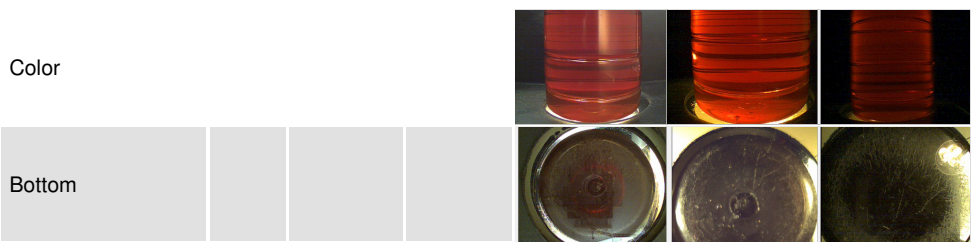


| FLUID DEGRADATION |          | method     | limit/base | current     | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN)  | mg KOH/g | ASTM D8045 |            | <b>1.03</b> | 1.023    | 1.058    |

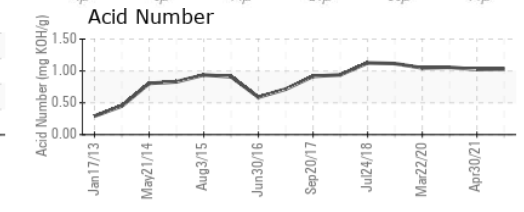
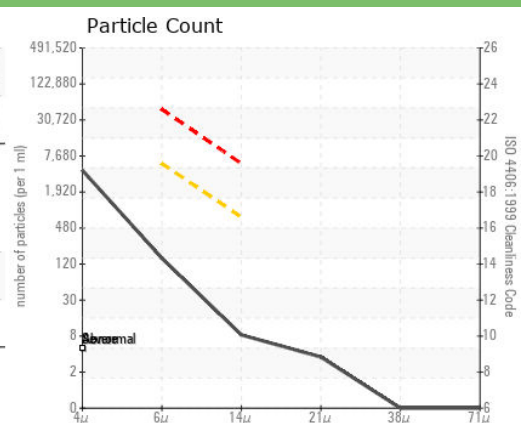
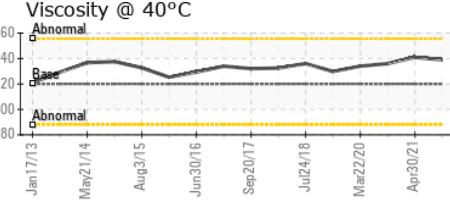
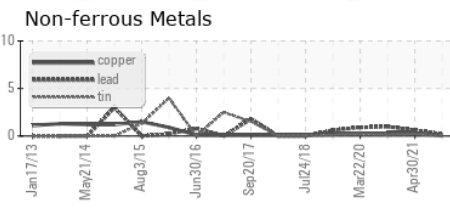
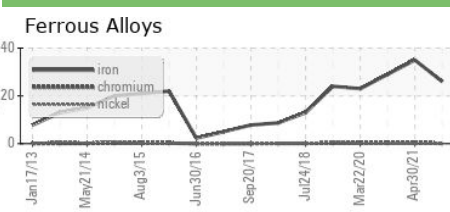
| VISUAL           |        | method  | limit/base | current      | history1 | history2 |
|------------------|--------|---------|------------|--------------|----------|----------|
| White Metal      | scalar | *Visual | NONE       | <b>NONE</b>  | NONE     | VLITE    |
| Yellow Metal     | scalar | *Visual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

| FLUID PROPERTIES |     | method    | limit/base | current    | history1 | history2 |
|------------------|-----|-----------|------------|------------|----------|----------|
| Visc @ 40°C      | cSt | ASTM D445 | 320        | <b>339</b> | 341      | 336      |

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



## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC05582424 **Received** : 01 Jul 2022  
**Lab Number** : 05582424 **Diagnosed** : 05 Jul 2022  
**Unique Number** : 10036850 **Diagnostician** : Don Baldrige  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**EOL DE NICARAGUA S.A.**  
 DEL SEMAFORO DEL CLUB TERRAZA, 1 CUADRA AL SUR  
 MANAGUA, ZZ  
 NI  
 Contact: Rafael Bermudez

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)

T:  
F: