



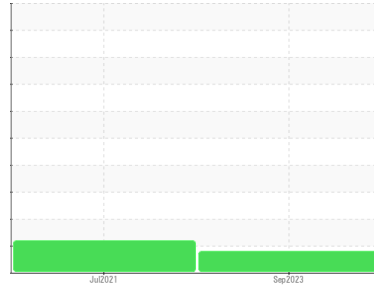
OIL ANALYSIS REPORT

Sample Rating Trend

ISO



Area
MARYNEAL [200006807]
 Machine Id
87029 SITE 38
 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 moderate 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 | | NX06054862 | NX009357 | --- |
| Sample Date | Client Info | | 19 Sep 2023 | 21 Jul 2021 | --- |
| Machine Age | hrs | Client Info | 0 | 0 | --- |
| Oil Age | hrs | Client Info | 0 | 0 | --- |
| Oil Changed | Client Info | | N/A | N/A | --- |
| Sample Status | | | ATTENTION | ABNORMAL | --- |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|------------|-------------|-----------|--------------|----------|
| PQ | ASTM D8184 | >80 | 13 | 18 | --- |
| Iron | ppm | ASTM D5185m | >150 | 13 | 8 |
| Chromium | ppm | ASTM D5185m | >5 | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >10 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >10 | 0 | 0 |
| Silver | ppm | ASTM D5185m | | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >10 | 0 | <1 |
| Lead | ppm | ASTM D5185m | >20 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >50 | <1 | <1 |
| Tin | ppm | ASTM D5185m | >3 | 0 | <1 |
| Antimony | ppm | ASTM D5185m | >3 | --- | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|-------------|---------|-------------|----------|
| Boron | ppm | ASTM D5185m | | 6 | 6 |
| 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 | | 9 | 18 |
| Phosphorus | ppm | ASTM D5185m | | 175 | 185 |
| Zinc | ppm | ASTM D5185m | | 0 | 0 |
| Sulfur | ppm | ASTM D5185m | | 4621 | 3792 |

CONTAMINANTS

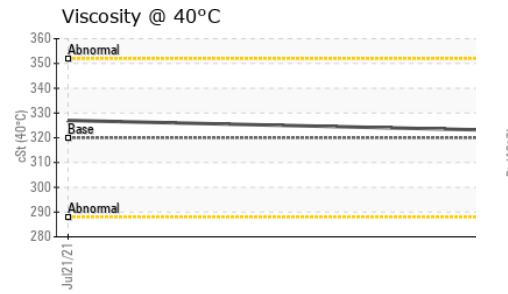
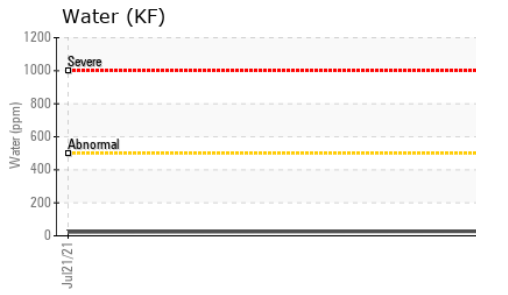
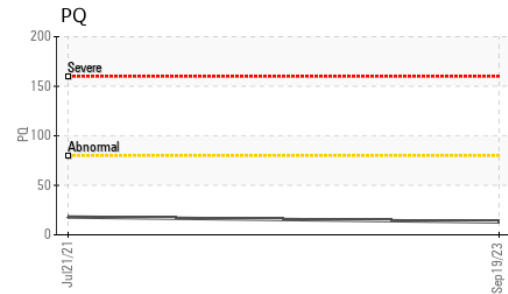
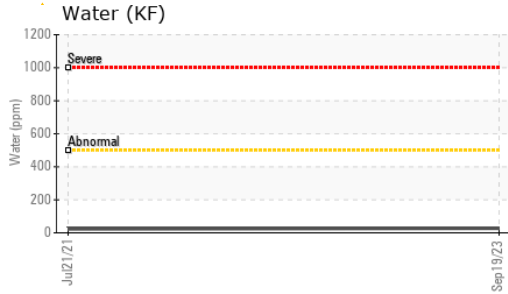
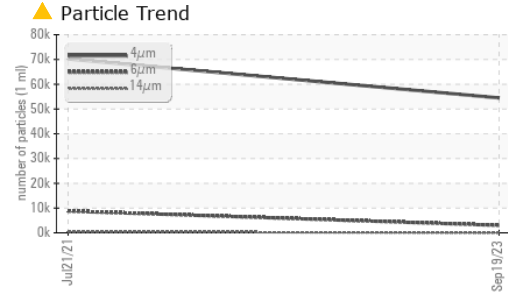
| | method | limit/base | current | history1 | history2 |
|-----------|--------|-------------|---------|--------------|----------|
| Silicon | ppm | ASTM D5185m | >50 | 30 | 6 |
| Sodium | ppm | ASTM D5185m | >20 | 5 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | 0 | <1 |
| Water | % | ASTM D6304 | >0.05 | 0.003 | 0.002 |
| ppm Water | ppm | ASTM D6304 | >500 | 27 | 23.6 |

FLUID CLEANLINESS

| | method | limit/base | current | history1 | history2 |
|-----------------|--------------|------------|-------------------|------------|----------|
| Particles >4µm | ASTM D7647 | | 54469 | 70216 | --- |
| Particles >6µm | ASTM D7647 | >2500 | ▲ 3002 | ▲ 8771 | --- |
| Particles >14µm | ASTM D7647 | >320 | 40 | ▲ 390 | --- |
| Particles >21µm | ASTM D7647 | >80 | 7 | ▲ 89 | --- |
| Particles >38µm | ASTM D7647 | >20 | 1 | 3 | --- |
| Particles >71µm | ASTM D7647 | >4 | 0 | 0 | --- |
| Oil Cleanliness | ISO 4406 (c) | >--/18/15 | ▲ 23/19/12 | ▲ 23/20/16 | --- |



OIL ANALYSIS REPORT

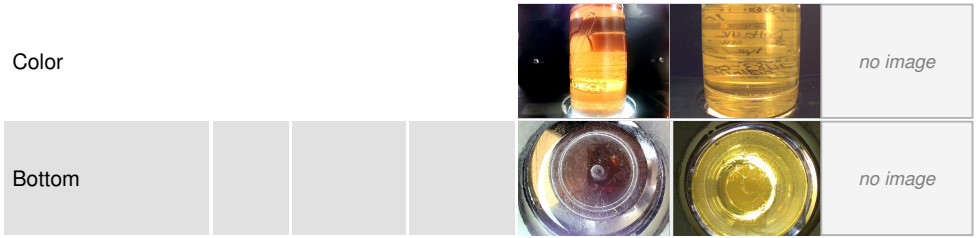


| FLUID DEGRADATION | method | limit/base | current | history1 | history2 |
|-------------------|----------|------------|-------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.46 | 0.36 | --- |

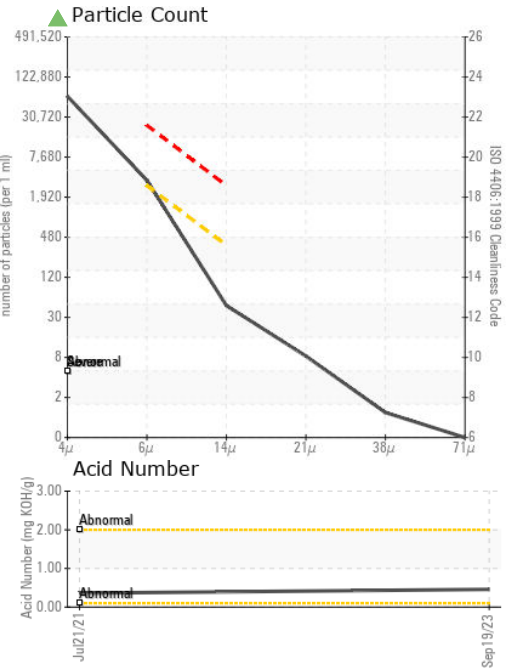
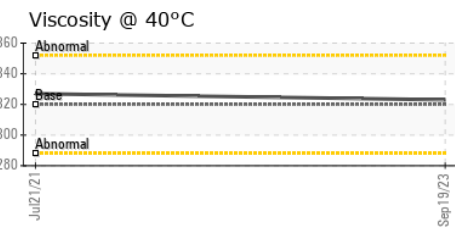
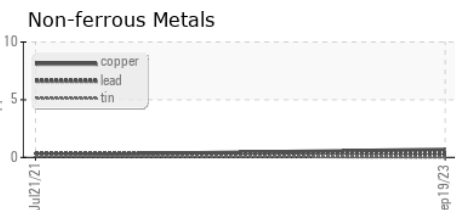
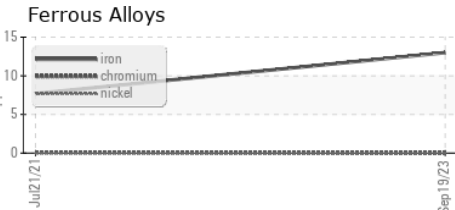
| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | --- |
| Precipitate | scalar | *Visual | NONE | NONE | ---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

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|------------|----------|----------|
| Visc @ 40°C | cSt | ASTM D445 | 323 | 327 | --- |

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



GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX06054862 **Received** : 08 Jan 2024
Lab Number : 06054862 **Diagnosed** : 10 Jan 2024
Unique Number : 10820811 **Diagnostician** : Don Baldrige
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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