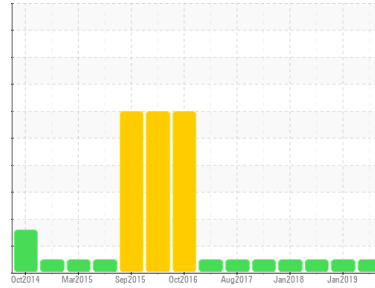




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
SANDY B
 Machine Id
[SANDY B] 006 562531-6
 Component
Starboard Reduction Gear
 Fluid
SHELL ROTELLA T 40 (--- GAL)

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.

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 | | | MW0061388 | MWM691466 | MWM693054 |
| Sample Date | Client Info | | | 01 Nov 2023 | 30 Jan 2019 | 12 Nov 2018 |
| Machine Age | hrs | Client Info | | 2887 | 0 | 0 |
| Oil Age | hrs | Client Info | | 431 | 0 | 0 |
| Oil Changed | Client Info | | | Not Chngd | N/A | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|-------------|-----|-------------|------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m | >150 | 4 | 82 | 85 |
| Chromium | ppm | ASTM D5185m | >10 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >10 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | <1 | <1 | <1 |
| Lead | ppm | ASTM D5185m | >100 | <1 | 38 | 39 |
| Copper | ppm | ASTM D5185m | >50 | 50 | 41 | 42 |
| Tin | ppm | ASTM D5185m | >10 | 0 | 1 | <1 |
| Antimony | ppm | ASTM D5185m | >5 | --- | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|------------|-----|-------------|------------|-------------|----------|----------|
| Boron | ppm | ASTM D5185m | 0 | 38 | 212 | 204 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | 0 | 101 | 28 | 28 |
| Manganese | ppm | ASTM D5185m | | 0 | 1 | 1 |
| Magnesium | ppm | ASTM D5185m | 432 | 56 | 80 | 82 |
| Calcium | ppm | ASTM D5185m | 1121 | 2425 | 2080 | 2188 |
| Phosphorus | ppm | ASTM D5185m | 996 | 1028 | 658 | 673 |
| Zinc | ppm | ASTM D5185m | 881 | 1140 | 729 | 730 |
| Sulfur | ppm | ASTM D5185m | | 3383 | 3496 | 3160 |

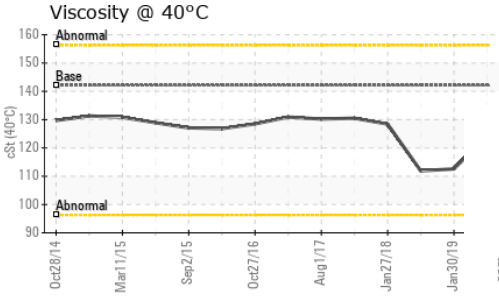
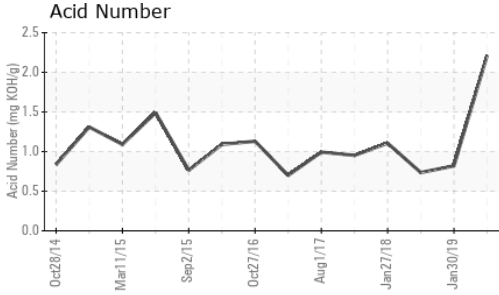
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|--------------|-----|-------------|------------|--------------|----------|----------|
| Silicon | ppm | ASTM D5185m | >50 | 3 | 6 | 6 |
| Sodium | ppm | ASTM D5185m | | 4 | 29 | 30 |
| Potassium | ppm | ASTM D5185m | >20 | <1 | 3 | 4 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|------------|------------|--------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | 2.212 | 0.820 | 0.735 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|---------|------------|--------------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |



OIL ANALYSIS REPORT

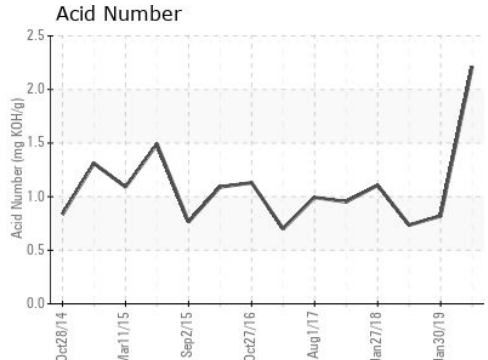
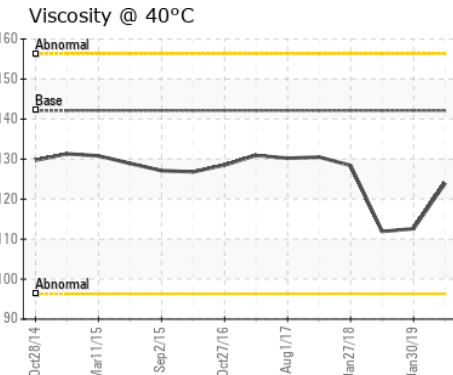
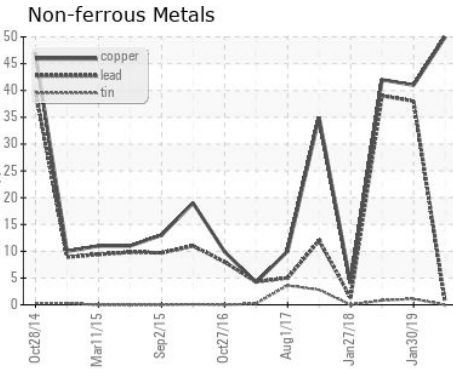
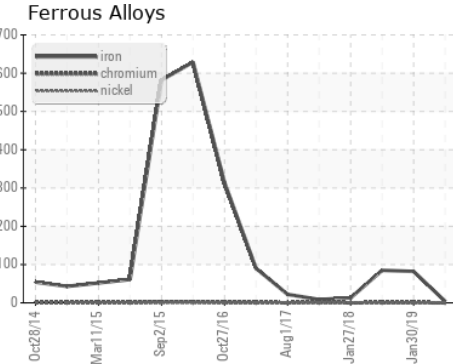


| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|------------------|-----|-----------|------------|------------|----------|----------|
| Visc @ 40°C | cSt | ASTM D445 | 142.1 | 124 | 112.6 | 111.9 |

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

| | | | | | | |
|--------|--|--|--|----------|----------|----------|
| Color | | | | no image | no image | no image |
| Bottom | | | | no image | no image | no image |

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0061388 **Received** : 13 Nov 2023
Lab Number : **06006472** **Diagnosed** : 15 Nov 2023
Unique Number : 10740234 **Diagnostician** : Don Baldrige
Test Package : MAR 2

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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