



| | |
|-----------------|---------------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

Machine Id
EMD MAGNOLIA
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LE (200 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | MW0061848 | MW0061855 | MW0061843 |
| Sample Date | | Client Info | | 15 May 2024 | 18 Mar 2024 | 01 Jan 2024 |
| Machine Age | hrs | Client Info | | 6690 | 0 | 5747 |
| Oil Age | hrs | Client Info | | 1139 | 0 | 197 |
| Filter Age | hrs | Client Info | | 1065 | 0 | 123 |
| Oil Changed | | Client Info | | Not Changd | Not Changd | Not Changd |
| Filter Changed | | Client Info | | Not Changd | Not Changd | Not Changd |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >75 | 9 | 11 | 5 |
| Chromium | ppm | ASTM D5185m | >8 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | >3 | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | <1 | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >15 | 2 | 2 | 2 |
| Lead | ppm | ASTM D5185m | >18 | 2 | 2 | 4 |
| Copper | ppm | ASTM D5185m | >80 | 7 | 7 | 4 |
| Tin | ppm | ASTM D5185m | >14 | 6 | 7 | 5 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

There is no indication of any contamination in the oil.

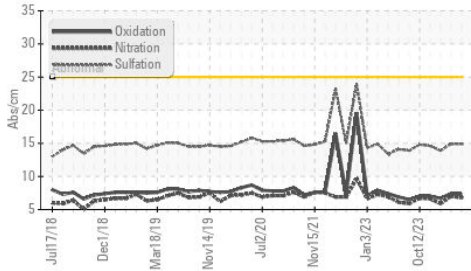
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >20 | 4 | 4 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | <1 | <1 | 2 |
| Fuel | | WC Method | >4.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.3 | 0.3 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 6.8 | 7.0 | 5.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 14.9 | 14.9 | 13.9 |
| 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 |

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | >75 | 13 | 7 | 3 |
| Boron | ppm | ASTM D5185m | | 41 | 42 | 36 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 45 | 46 | 38 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 39 | 41 | 34 |
| Calcium | ppm | ASTM D5185m | | 3722 | 3816 | 3335 |
| Phosphorus | ppm | ASTM D5185m | | 30 | 35 | 10 |
| Zinc | ppm | ASTM D5185m | 10 | 31 | 37 | 5 |
| Sulfur | ppm | ASTM D5185m | | 2904 | 2942 | 2610 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 7.3 | 7.4 | 6.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.2 | 6.7 | 7.1 | 6.7 |
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | 14.3 | 14.2 | 14.5 |

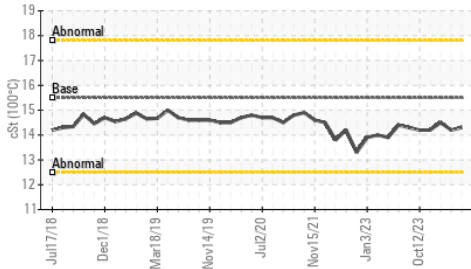
FT-IR (Direct Trend)



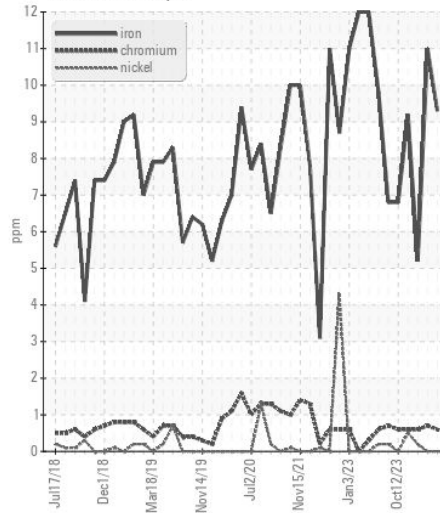
Base Number



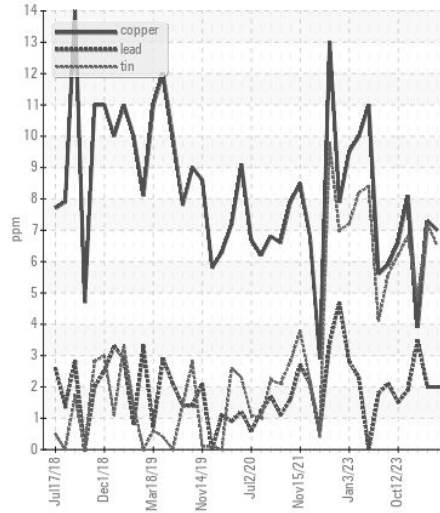
Viscosity @ 100°C



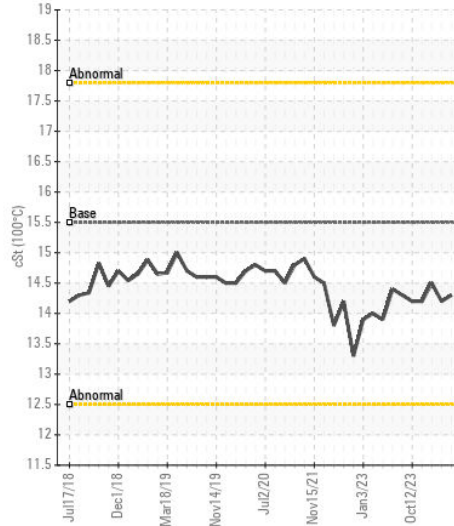
Ferrous Alloys



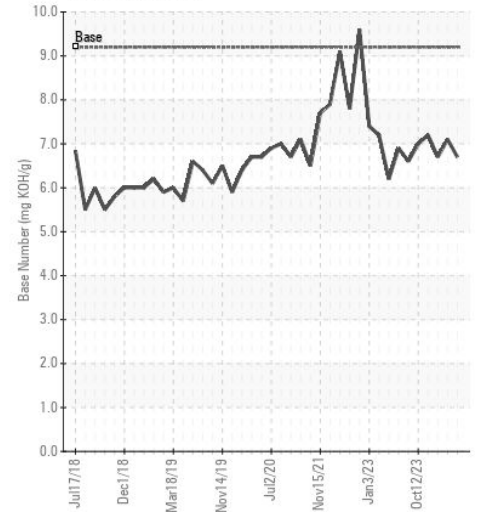
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0061848
Lab Number : 06193253
Unique Number : 11050005
Test Package : MAR 2

Received : 28 May 2024
Tested : 30 May 2024
Diagnosed : 30 May 2024 - Sean Felton

MAGNOLIA MARINE TRANSPORT
 697 HAINING ROAD
 VICKSBURG, MS
 US 39183
 Contact: MMT MAINTENANCE PLANNERS
 mmtmaintenanceplanners@ergon.com

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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