MAR II

WEAR CHECK Inland Marine Oil Analysis Program

# OIL ANALYSIS REPORT

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

Machine Id
**MRC**
Component
**Port Main Engine**
Fluid
**CHEVRON DELO 400 XLE 15W40 (--- GAL)**

## RECOMMENDATION

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

## WEAR

The lead level is abnormal. All other component wear rates are normal.

## CONTAMINATION

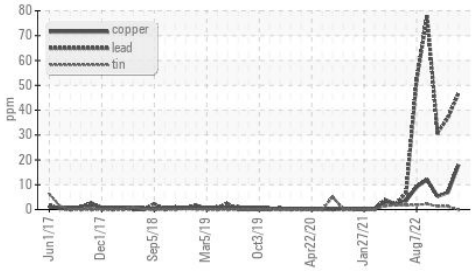
There is no indication of any contamination in the oil.

## FLUID CONDITION

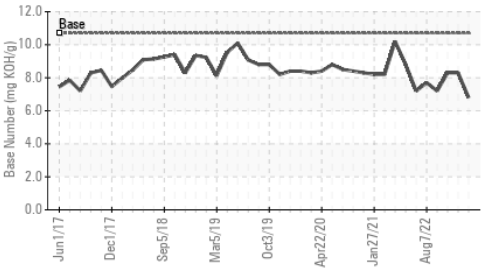
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | MW05745140 | MW05718172 | MW05674001 |
| Sample Date | | Client Info | | 19 Jan 2023 | 14 Dec 2022 | 23 Oct 2022 |
| Machine Age | hrs | Client Info | | 5046 | 4299 | 3875 |
| Oil Age | hrs | Client Info | | 1964 | 1194 | 769 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | ABNORMAL | MARGINAL | ABNORMAL |
| Iron | ppm | ASTM D5185m | >75 | 16 | 16 | 16 |
| Chromium | ppm | ASTM D5185m | >8 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >3 | 2 | 2 | 2 |
| Silver | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >15 | 2 | 2 | 2 |
| Lead | ppm | ASTM D5185m | >18 | ▲ 47 | ▲ 37 | ▲ 31 |
| Copper | ppm | ASTM D5185m | >80 | 18 | 7 | 5 |
| Tin | ppm | ASTM D5185m | >14 | 0 | 1 | 1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >20 | 4 | 2 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | 0 | 2 | 0 |
| 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 | | 0.6 | 0.6 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 9.8 | 10.0 | 9.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 24.6 | 25.3 | 25.2 |
| 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 |
| Sodium | ppm | ASTM D5185m | >75 | 0 | 0 | 1 |
| Boron | ppm | ASTM D5185m | | 180 | 173 | 200 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 92 | 101 | 98 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 519 | 540 | 595 |
| Calcium | ppm | ASTM D5185m | | 1436 | 1542 | 1569 |
| Phosphorus | ppm | ASTM D5185m | 760 | 627 | 713 | 727 |
| Zinc | ppm | ASTM D5185m | 830 | 730 | 865 | 887 |
| Sulfur | ppm | ASTM D5185m | 2770 | 2670 | 2980 | 3200 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 20.3 | 20.2 | 19.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.7 | 6.8 | 8.3 | 8.3 |
| Visc @ 100°C | cSt | ASTM D445 | 14.9 | 13.1 | 13.0 | 12.9 |

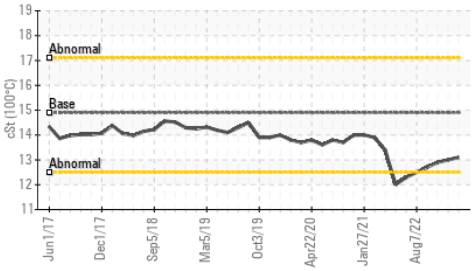
Non-ferrous Metals



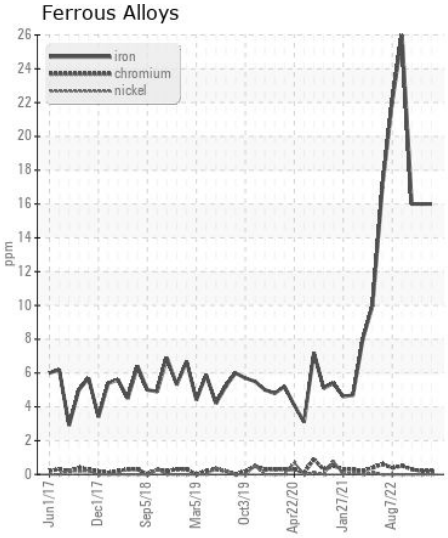

Base Number



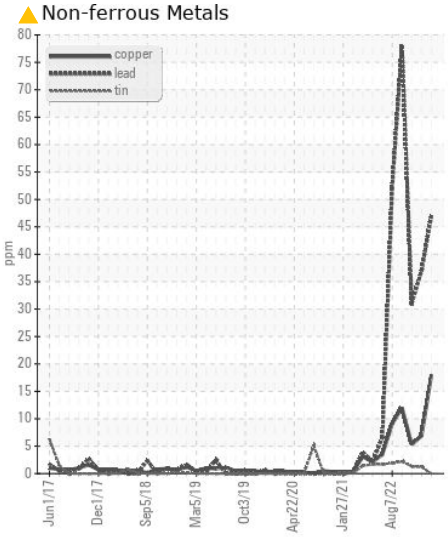

Viscosity @ 100°C



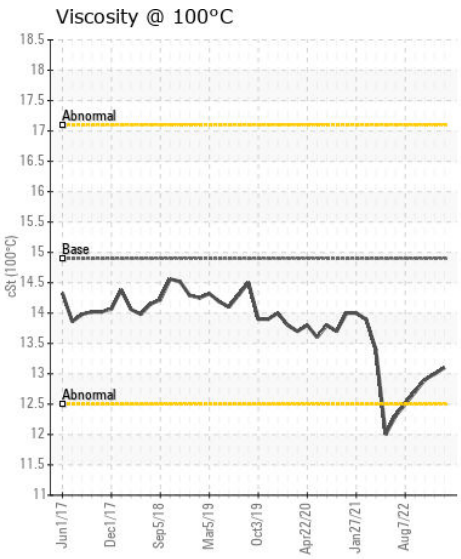

Ferrous Alloys




Non-ferrous Metals




Viscosity @ 100°C

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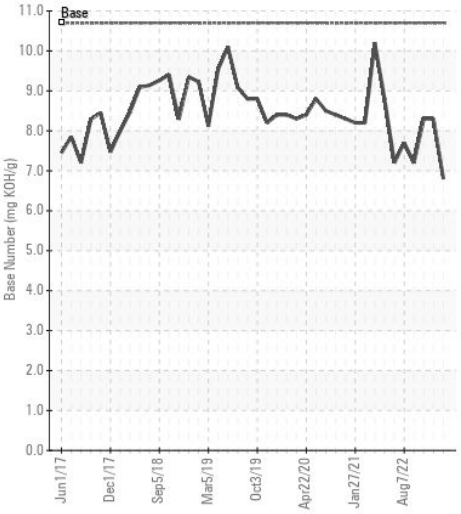


Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : MW05745140
**Lab Number** : 05745140
**Unique Number** : 10299739
**Test Package** : MAR 2

**Received** : 20 Jan 2023
**Tested** : 23 Jan 2023
**Diagnosed** : 24 Jan 2023 - Angela Borella

*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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