MAR II

WEAR CHECK Inland Marine Oil Analysis Program

# OIL ANALYSIS REPORT

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

Area
**MARY K CAVARRA**
Machine Id
**[MARY K CAVARRA] 001 579878-1**
Component
**Port Main Engine**
Fluid
**CHEVRON DELO 710 LS (250 GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor.

## WEAR

All component wear rates are normal.

## CONTAMINATION

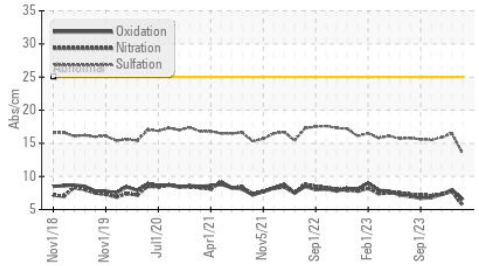
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

## FLUID CONDITION

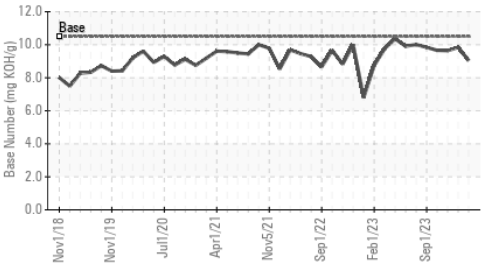
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | MW0051226 | MW0061291 | MW0061292 |
| Sample Date | | Client Info | | 01 Jun 2024 | 01 Dec 2023 | 01 Nov 2023 |
| Machine Age | hrs | Client Info | | 191 | 78184 | 97466 |
| Oil Age | hrs | Client Info | | 191 | 78184 | 97466 |
| Filter Age | hrs | Client Info | | 0 | 78184 | 0 |
| Oil Changed | | Client Info | | N/A | Not Changd | N/A |
| Filter Changed | | Client Info | | N/A | Not Changd | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| Iron | ppm | ASTM D5185m | >75 | 13 | 9 | 5 |
| Chromium | ppm | ASTM D5185m | >8 | <1 | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >3 | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >15 | 2 | 2 | <1 |
| Lead | ppm | ASTM D5185m | >18 | 8 | 2 | 1 |
| Copper | ppm | ASTM D5185m | >80 | 7 | 10 | 7 |
| Tin | ppm | ASTM D5185m | >14 | 8 | 2 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | <1 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >20 | 8 | 4 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | 5 | <1 | <1 |
| 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 | | 0.2 | 0.8 | 0.8 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 5.7 | 7.7 | 7.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 13.4 | 16.5 | 15.9 |
| 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 |
| Sodium | ppm | ASTM D5185m | >75 | 2 | <1 | 1 |
| Boron | ppm | ASTM D5185m | | 38 | 39 | 37 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 43 | 45 | 41 |
| Manganese | ppm | ASTM D5185m | | 1 | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 7 | 13 | 10 |
| Calcium | ppm | ASTM D5185m | | 3569 | 3477 | 3168 |
| Phosphorus | ppm | ASTM D5185m | | 4 | 4 | 1 |
| Zinc | ppm | ASTM D5185m | | 1 | 0 | 2 |
| Sulfur | ppm | ASTM D5185m | | 2639 | 2337 | 2239 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 6.5 | 8.0 | 7.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.5 | 9.05 | 9.84 | 9.64 |
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | 14.4 | 15.0 | 14.9 |

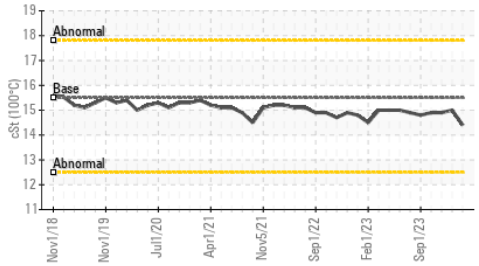
FT-IR (Direct Trend)



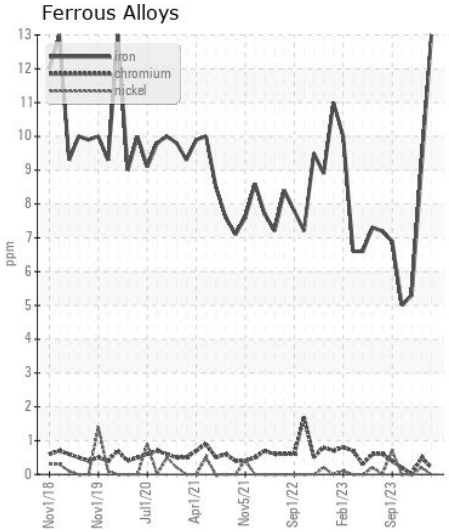

Base Number



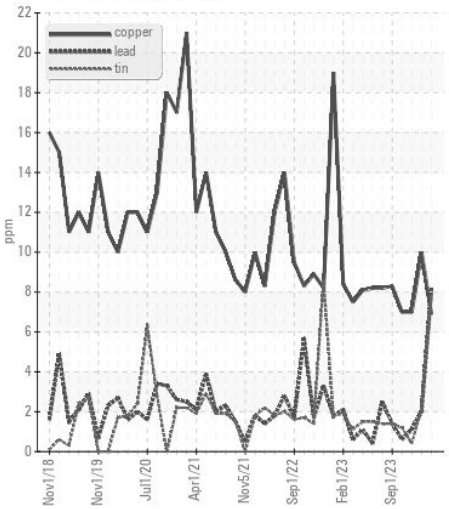

Viscosity @ 100°C



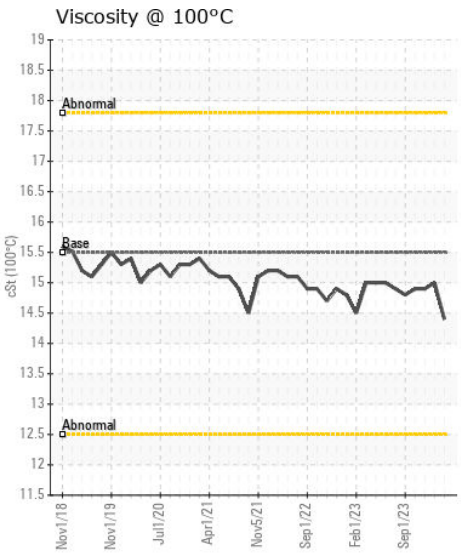

Ferrous Alloys




Non-ferrous Metals




Viscosity @ 100°C

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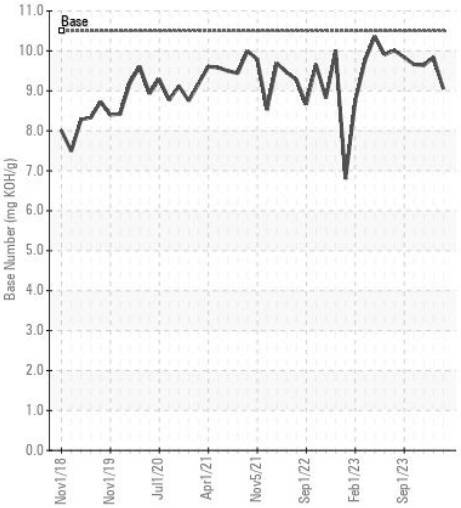


Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : MW0051226
**Lab Number** : 06210891
**Unique Number** : 11083755
**Test Package** : MAR 2

**Received** : 14 Jun 2024
**Tested** : 17 Jun 2024
**Diagnosed** : 17 Jun 2024 - Wes Davis

*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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