



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

Machine Id
BRAD BENNINK (S/N 76-D1-1007)

Component
Starboard Main Engine

Fluid
CHEVRON DELO 710 LS (350 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | MW0053104 | MW0053127 | MW0053138 |
| Sample Date | | Client Info | | 14 Feb 2024 | 15 Jan 2024 | 18 Dec 2023 |
| Machine Age | hrs | Client Info | | 10903 | 10161 | 9563 |
| Oil Age | hrs | Client Info | | 10903 | 10161 | 9563 |
| Filter Age | hrs | Client Info | | 134 | 573 | 1224 |
| Oil Changed | | Client Info | | N/A | Not Changd | Not Changd |
| Filter Changed | | Client Info | | Changed | Not Changed | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >75 | 15 | 15 | 16 |
| Chromium | ppm | ASTM D5185m | >8 | 2 | 2 | 2 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >3 | 0 | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >15 | 1 | 2 | 2 |
| Lead | ppm | ASTM D5185m | >18 | 7 | 7 | 5 |
| Copper | ppm | ASTM D5185m | >80 | 11 | 13 | 13 |
| Tin | ppm | ASTM D5185m | >14 | 8 | 8 | 6 |
| Vanadium | ppm | ASTM D5185m | | <1 | <1 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

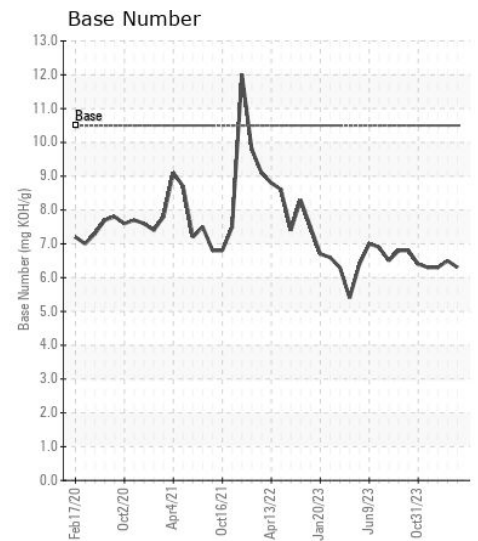
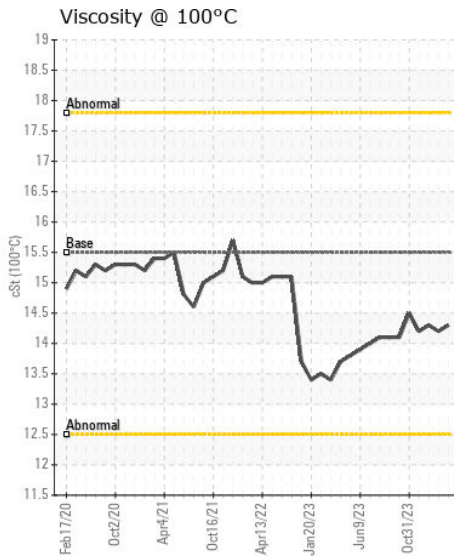
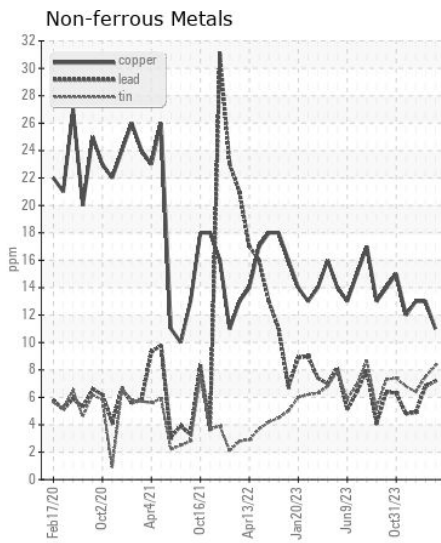
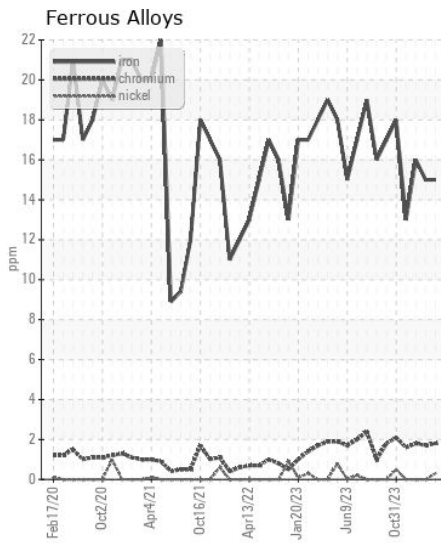
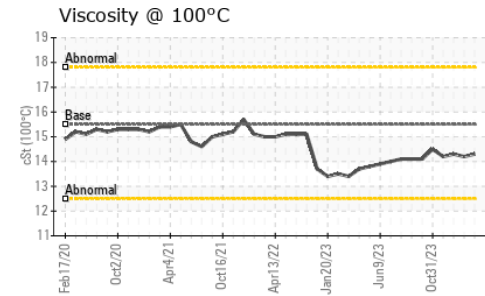
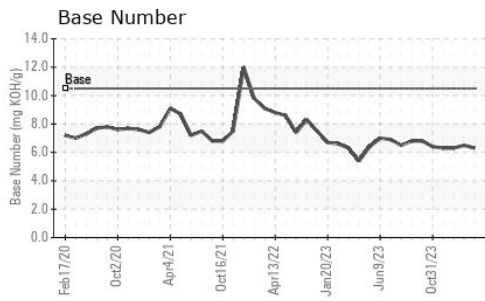
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >20 | 3 | 3 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | 11 | 16 | 16 |
| 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 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 8.3 | 8.4 | 8.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 16.5 | 16.6 | 16.8 |
| 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 suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | >75 | 2 | 3 | 2 |
| Boron | ppm | ASTM D5185m | | 36 | 39 | 38 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 48 | 48 | 47 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | | 11 | 13 | 11 |
| Calcium | ppm | ASTM D5185m | | 4112 | 3412 | 3265 |
| Phosphorus | ppm | ASTM D5185m | | 0 | 0 | 34 |
| Zinc | ppm | ASTM D5185m | | 0 | 1 | 0 |
| Sulfur | ppm | ASTM D5185m | | 2570 | 2219 | 2039 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 9.6 | 9.7 | 9.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.5 | 6.3 | 6.5 | 6.3 |
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | 14.3 | 14.2 | 14.3 |



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0053104
Lab Number : 06104136
Unique Number : 10902366
Test Package : MAR 2

Received : 29 Feb 2024
Tested : 29 Feb 2024
Diagnosed : 29 Feb 2024 - Wes Davis

AMERICAN COMMERCIAL LINES
 PO BOX 610, 1701 E. MARKET STREET
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 US 47130
 Contact: RONALD SCHNEIDER
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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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