



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

Area
LARRY DRUMMOND
Machine Id
[LARRY DRUMMOND] 003 518412-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LE (350 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | MW0073168 | MW0068768 | MW0064372 |
| Sample Date | | Client Info | | 01 Jul 2024 | 01 Jun 2024 | 01 May 2024 |
| Machine Age | hrs | Client Info | | 12688 | 12117 | 11592 |
| Oil Age | hrs | Client Info | | 12688 | 12117 | 11592 |
| 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 | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >50 | 20 | 18 | 17 |
| Chromium | ppm | ASTM D5185m | >10 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >11 | 0 | <1 | <1 |
| Titanium | ppm | ASTM D5185m | >3 | 0 | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >5 | 3 | 3 | 2 |
| Lead | ppm | ASTM D5185m | >10 | 8 | 8 | 8 |
| Copper | ppm | ASTM D5185m | >20 | 28 | 27 | 24 |
| Tin | ppm | ASTM D5185m | >1 | 6 | 6 | 6 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | <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.

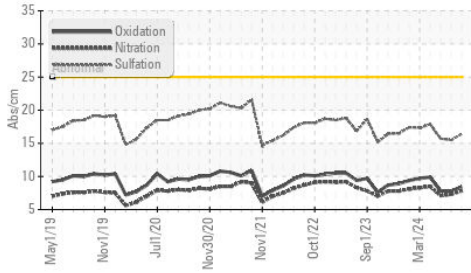
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >5 | 7 | 6 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | 4 | 5 | 4 |
| Fuel | | WC Method | >4.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | | 0.2 | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.8 | 7.3 | 7.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 16.4 | 15.5 | 15.7 |
| 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

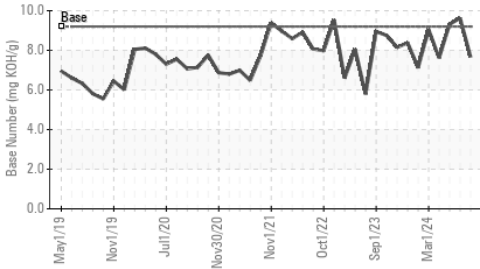
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|-------------|------|------|
| Sodium | ppm | ASTM D5185m | >75 | 1 | 0 | 1 |
| Boron | ppm | ASTM D5185m | | 41 | 42 | 46 |
| Barium | ppm | ASTM D5185m | | 0 | 1 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 50 | 51 | 49 |
| Manganese | ppm | ASTM D5185m | | 5 | 4 | 3 |
| Magnesium | ppm | ASTM D5185m | | 14 | 13 | 13 |
| Calcium | ppm | ASTM D5185m | | 3446 | 3336 | 3381 |
| Phosphorus | ppm | ASTM D5185m | | 28 | 27 | 16 |
| Zinc | ppm | ASTM D5185m | 10 | 7 | 10 | 7 |
| Sulfur | ppm | ASTM D5185m | | 2357 | 2519 | 3026 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 8.4 | 7.8 | 7.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.2 | 7.66 | 9.63 | 9.31 |
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | 14.3 | 14.3 | 14.4 |

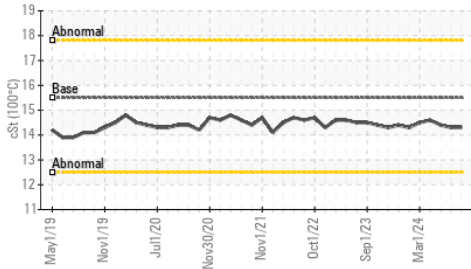
FT-IR (Direct Trend)



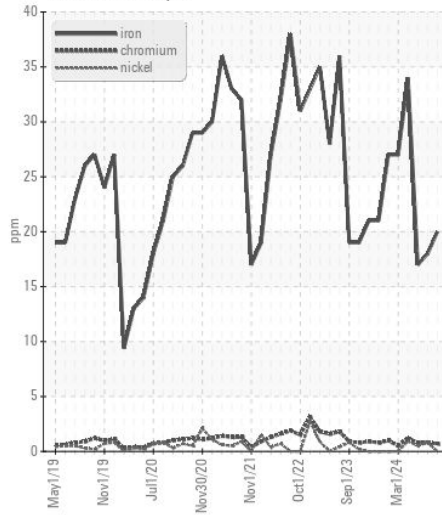
Base Number



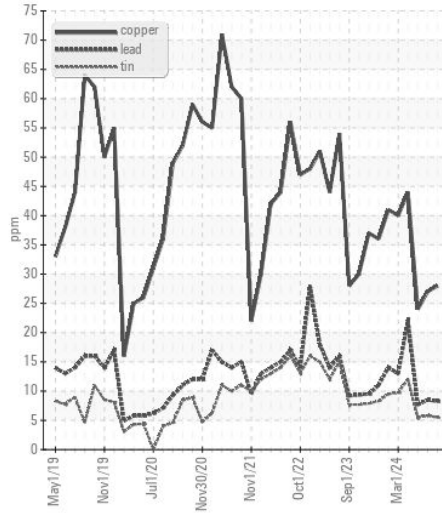
Viscosity @ 100°C



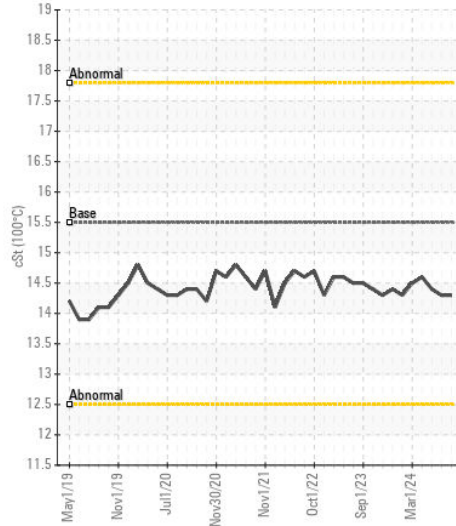
Ferrous Alloys



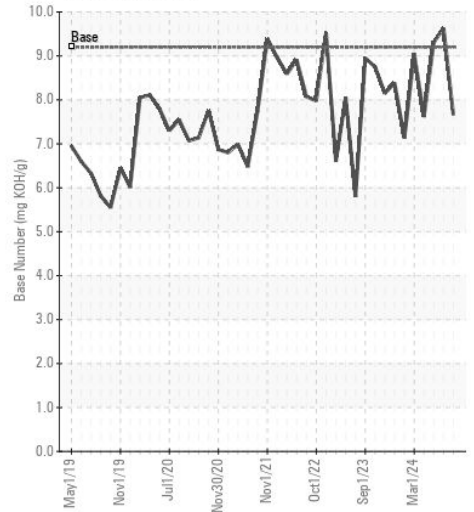
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0073168
Lab Number : 06237071
Unique Number : 11125905
Test Package : MAR 2
Received : 15 Jul 2024
Tested : 17 Jul 2024
Diagnosed : 17 Jul 2024 - Don Baldrige

INGRAM BARGE
 900 S 3RD ST
 PADUCAH, KY
 US 42003

Contact: JEFF BISHOP
 jeff.bishop@ingrambarga.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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