



OIL ANALYSIS REPORT

| | |
|---------------|---------------|
| WEAR | NORMAL |
| CONTAMINANTS | NORMAL |
| OIL CONDITION | NORMAL |

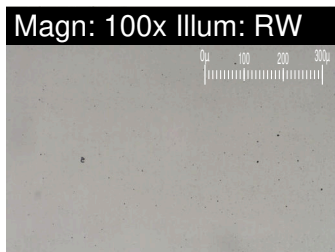
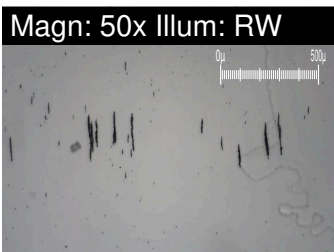
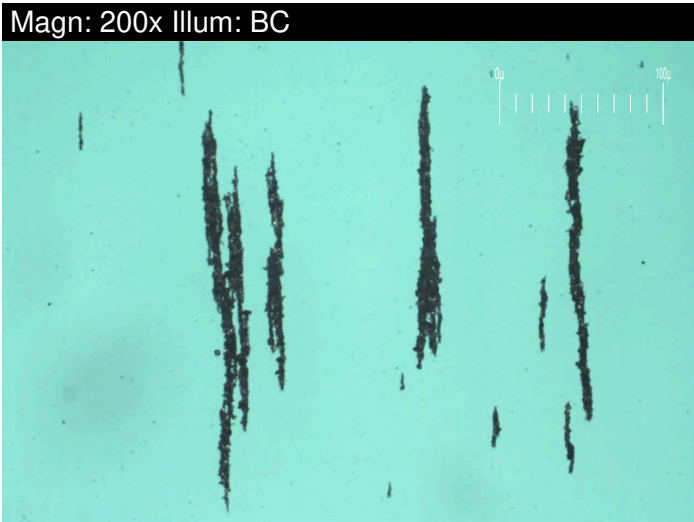
Machine Id
EGR-2213 (S/N 69195580)
 Component
3 Main Engine
 Fluid
SHELL ROTELLA T 15W40 (900 LTR)

RECOMMENDATION

Resample at the next service interval to monitor.

WEAR

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.



| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------------------|------------|---------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | WC0910232 | WC0574864 | WC0494647 |
| Sample Date | | Client Info | | 26 Feb 2024 | 15 Sep 2023 | 12 Jun 2023 |
| Machine Age | hrs | Client Info | | 68500 | 68000 | 67500 |
| Oil Age | hrs | Client Info | | 0 | 1850 | 1350 |
| Filter Age | hrs | Client Info | | 0 | 1850 | 1350 |
| Oil Changed | | Client Info | | Not Chngd | Not Chngd | N/A |
| Filter Changed | | Client Info | | Not Chngd | Not Chngd | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| PQ | | ASTM D8184* | | 0 | 0 | 0 |
| Iron | ppm | ASTM D5185(m) | >75 | 3 | 3 | 3 |
| Chromium | ppm | ASTM D5185(m) | >8 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >2 | <1 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | >3 | 0 | 0 | <1 |
| Silver | ppm | ASTM D5185(m) | >2 | <1 | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >15 | <1 | <1 | <1 |
| Lead | ppm | ASTM D5185(m) | >18 | <1 | <1 | 0 |
| Copper | ppm | ASTM D5185(m) | >80 | 1 | 2 | 2 |
| Tin | ppm | ASTM D5185(m) | >14 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Large Particles | | DR-Ferr* | | 8.4 | 6.4 | 5.1 |
| Small Particles | | DR-Ferr* | | 5.0 | 5.2 | 3.8 |
| Total Particles | | DR-Ferr* | >--- | 13.4 | 11.6 | 8.9 |
| Large Particles Percentage | % | DR-Ferr* | | 25.4 | 10.3 | 14.6 |
| Severity Index | | DR-Ferr* | | 29 | 8 | 7 |
| Ferrous Rubbing | Scale 0-10 | ASTM D7684* | | 3 | 2 | 1 |
| Ferrous Sliding | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Cutting | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Rolling | Scale 0-10 | ASTM D7684* | | 1 | 1 | 1 |
| Ferrous Break-in | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Spheres | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Black Oxides | Scale 0-10 | ASTM D7684* | | 1 | 1 | |
| Ferrous Red Oxides | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Corrosive | Scale 0-10 | ASTM D7684* | | | | |
| Ferrous Other | Scale 0-10 | ASTM D7684* | | | | |
| Nonferrous Rubbing | Scale 0-10 | ASTM D7684* | | | | |
| Nonferrous Sliding | Scale 0-10 | ASTM D7684* | | | | |
| Nonferrous Cutting | Scale 0-10 | ASTM D7684* | | | | |
| Nonferrous Rolling | Scale 0-10 | ASTM D7684* | | | | |
| Nonferrous Other | Scale 0-10 | ASTM D7684* | | | | |

CONTAMINANTS

There is no indication of any contamination in the oil.

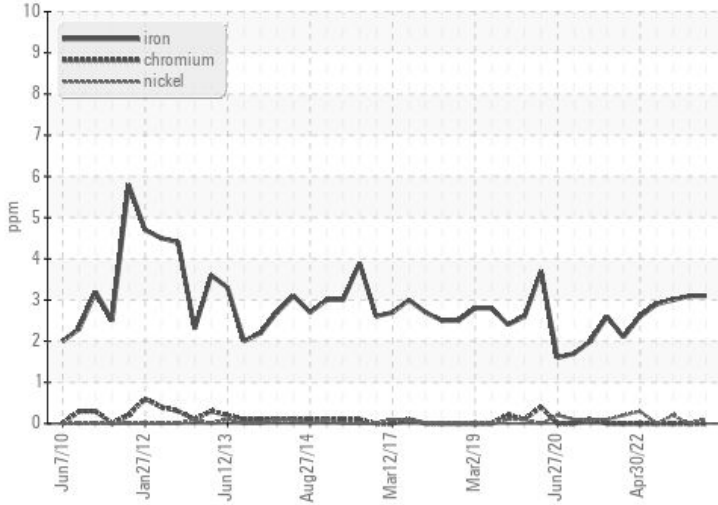
| | | | | | | |
|-----------------------|------------|---------------|------|----------------|------|------|
| Silicon | ppm | ASTM D5185(m) | >20 | 3 | 3 | 4 |
| Potassium | ppm | ASTM D5185(m) | >20 | 7 | 7 | 6 |
| Fuel | | WC Method | >4.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | ASTM D7844* | | 0 | 0 | 0 |
| Nitration | Abs/cm | ASTM D7624* | >20 | 7.5 | 7.5 | 2.8 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | 20.9 | 20.4 | 10.8 |
| Emulsified Water | scalar | Visual* | >0.1 | NEG | NEG | NEG |
| Carbonaceous Material | Scale 0-10 | ASTM D7684* | | | | |
| Sand/Dirt | Scale 0-10 | ASTM D7684* | | 1 | 1 | |
| Fibres | Scale 0-10 | ASTM D7684* | | | | |
| Spheres | Scale 0-10 | ASTM D7684* | | | | |
| Other | Scale 0-10 | ASTM D7684* | | 1 | 1 | 1 |

OIL CONDITION

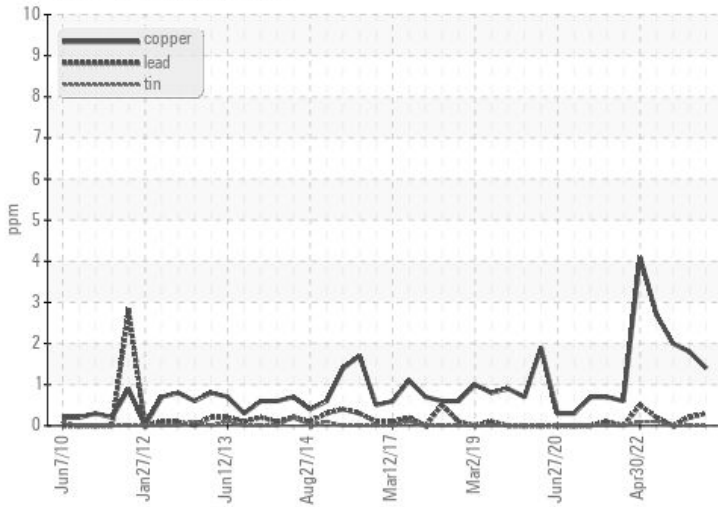
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|-----------------------|------------|---------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185(m) | >75 | 2 | 2 | 2 |
| Boron | ppm | ASTM D5185(m) | 35 | 136 | 130 | 132 |
| Barium | ppm | ASTM D5185(m) | 0 | 0 | <1 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | 2 | 2 | 2 |
| Manganese | ppm | ASTM D5185(m) | 0 | 0 | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 10 | 17 | 17 | 18 |
| Calcium | ppm | ASTM D5185(m) | 2340 | 2200 | 2246 | 2236 |
| Phosphorus | ppm | ASTM D5185(m) | 1110 | 970 | 983 | 1011 |
| Zinc | ppm | ASTM D5185(m) | 1210 | 1117 | 1131 | 1115 |
| Sulfur | ppm | ASTM D5185(m) | 3890 | 3068 | 2937 | 3009 |
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | 16.8 | 16.0 | 4.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | 10.1 | 10.27 | 7.41 | 7.48 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.7 | 13.4 | 13.3 | 13.2 |
| Lubricant Degradation | Scale 0-10 | ASTM D7684* | | | | |

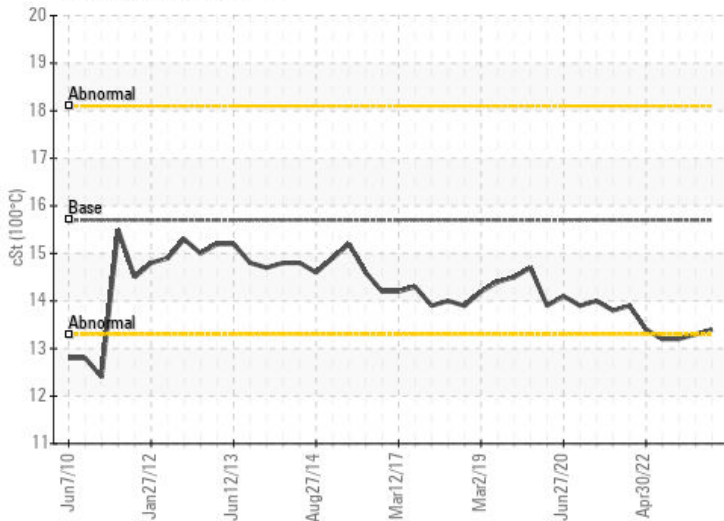
Ferrous Alloys



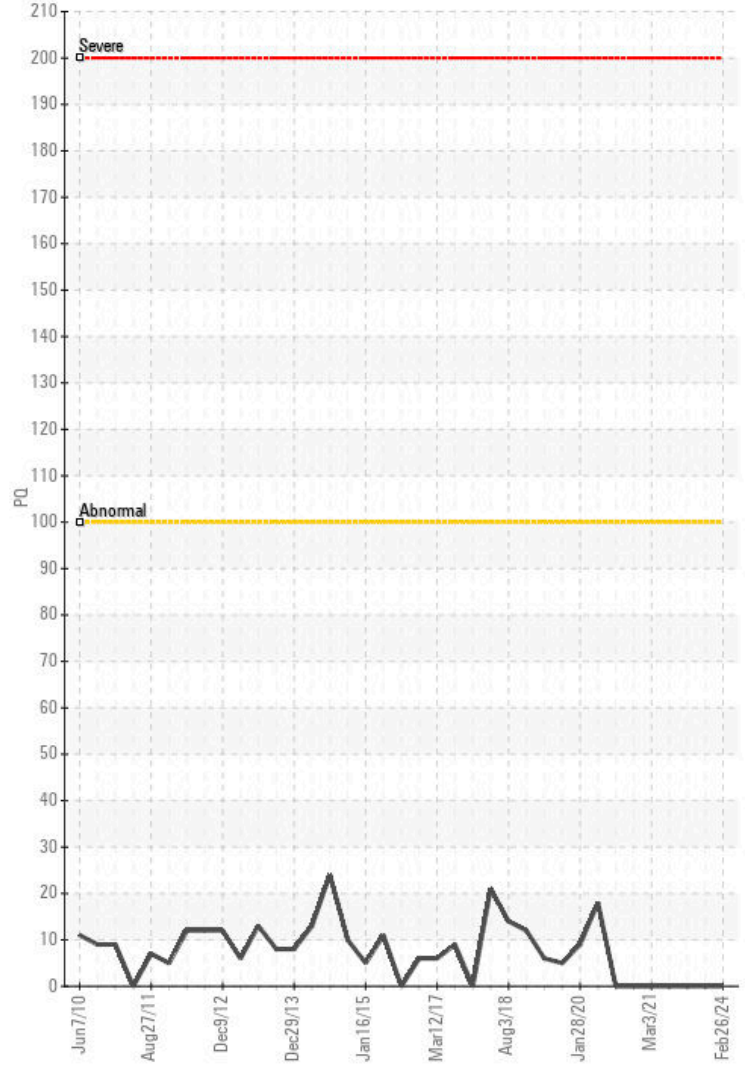
Non-ferrous Metals



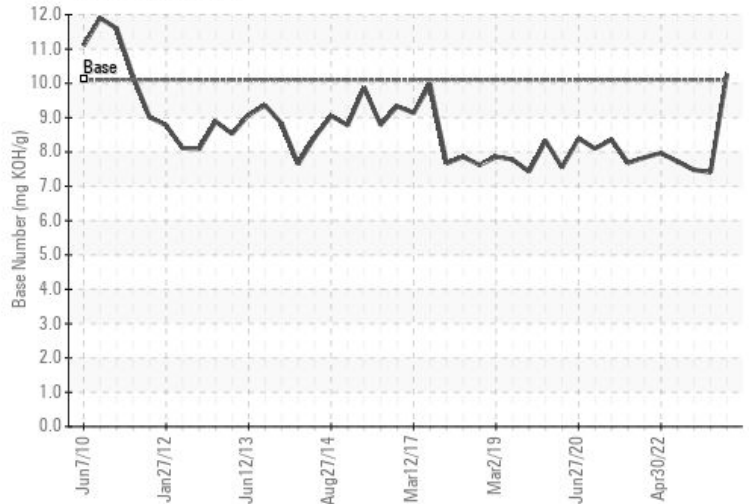
Viscosity @ 100°C



PQ



Base Number



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0910232
Lab Number : 02620394
Unique Number : 5737504
Test Package : MAR 3

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To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

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