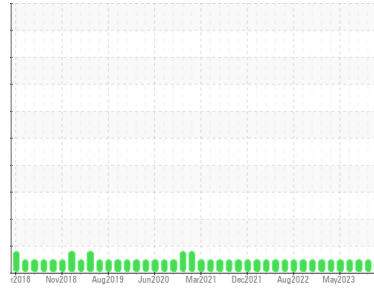




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
CUMMINS 226

Component
Rear Diesel Engine

Fluid
ESSO XD-3 EXTRA 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The condition of the oil is acceptable for the time in service.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | WC0866485 | WC0866628 | WC0730837 |
| Sample Date | Client Info | | 19 Dec 2023 | 08 Nov 2023 | 11 Sep 2023 |
| Machine Age | kms | Client Info | 0 | 0 | 0 |
| Oil Age | kms | Client Info | 9027 | 9771 | 10346 |
| Oil Changed | Client Info | | Changed | Changed | Changed |
| Sample Status | | | NORMAL | NORMAL | NORMAL |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| Water | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | WC Method | | NEG | NEG | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 | |
|-----------|--------|---------------|---------|--------------|----------|----|
| Iron | ppm | ASTM D5185(m) | >90 | 5 | 4 | 8 |
| Chromium | ppm | ASTM D5185(m) | >20 | 0 | 0 | <1 |
| Nickel | ppm | ASTM D5185(m) | >2 | <1 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | >2 | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >2 | 0 | <1 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >20 | 1 | <1 | 1 |
| Lead | ppm | ASTM D5185(m) | >40 | 0 | <1 | 0 |
| Copper | ppm | ASTM D5185(m) | >330 | <1 | <1 | 2 |
| Tin | ppm | ASTM D5185(m) | >15 | 0 | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 | |
|------------|--------|---------------|---------|--------------|----------|------|
| Boron | ppm | ASTM D5185(m) | | 120 | 165 | 91 |
| Barium | ppm | ASTM D5185(m) | | 0 | <1 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | | <1 | <1 | 2 |
| Manganese | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | | 15 | 19 | 25 |
| Calcium | ppm | ASTM D5185(m) | 3780 | 2184 | 2107 | 2134 |
| Phosphorus | ppm | ASTM D5185(m) | 1370 | 943 | 976 | 929 |
| Zinc | ppm | ASTM D5185(m) | 1500 | 1135 | 1121 | 1061 |
| Sulfur | ppm | ASTM D5185(m) | 3800 | 2953 | 2915 | 2867 |
| Lithium | ppm | ASTM D5185(m) | | <1 | <1 | <1 |

CONTAMINANTS

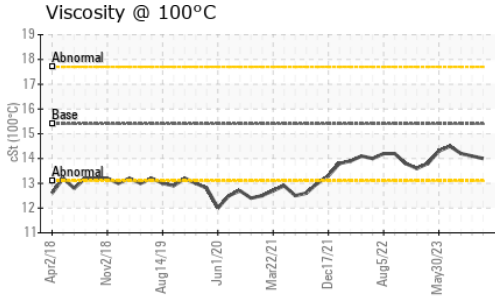
| | method | limit/base | current | history1 | history2 | |
|-----------|--------|---------------|---------|----------|----------|---|
| Silicon | ppm | ASTM D5185(m) | >25 | 3 | 5 | 5 |
| Sodium | ppm | ASTM D5185(m) | >192 | 3 | 8 | 2 |
| Potassium | ppm | ASTM D5185(m) | >20 | 5 | 5 | 6 |

INFRA-RED

| | method | limit/base | current | history1 | history2 | |
|-----------|----------|-------------|---------|-------------|----------|------|
| Soot % | % | ASTM D7844* | >6 | 0.2 | 0 | 0.2 |
| Nitration | Abs/cm | ASTM D7624* | >20 | 8.7 | 6.4 | 9.2 |
| Sulfation | Abs./1mm | ASTM D7415* | >30 | 21.9 | 21.1 | 24.9 |



OIL ANALYSIS REPORT

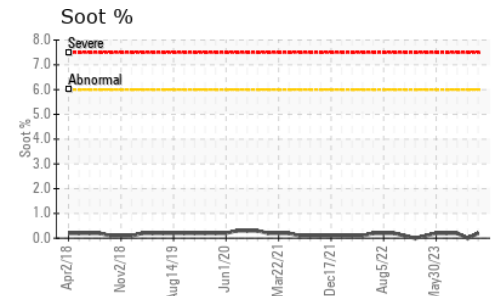
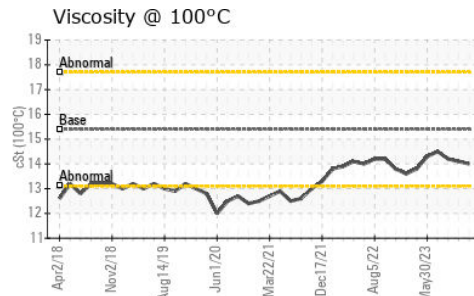
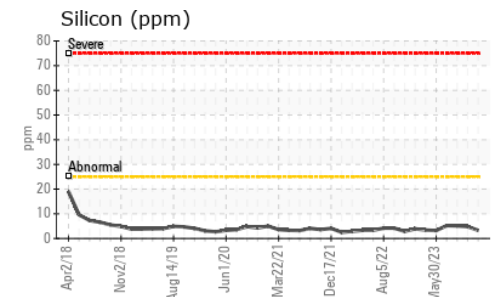
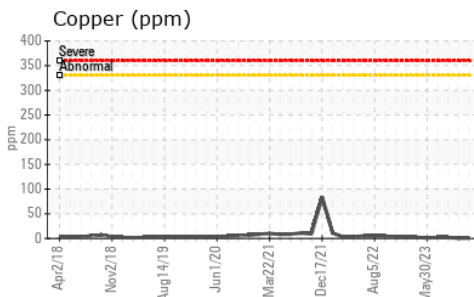
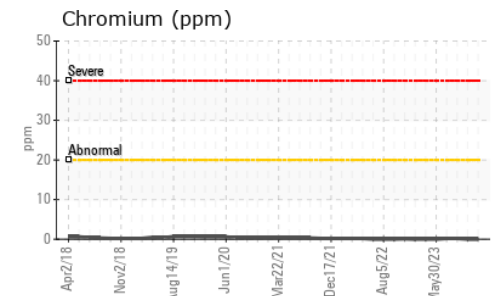
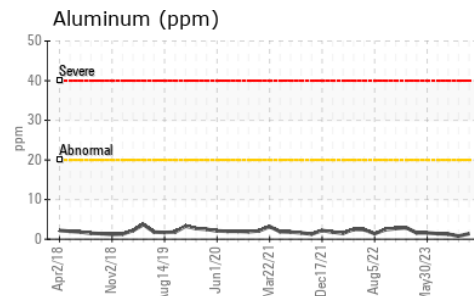
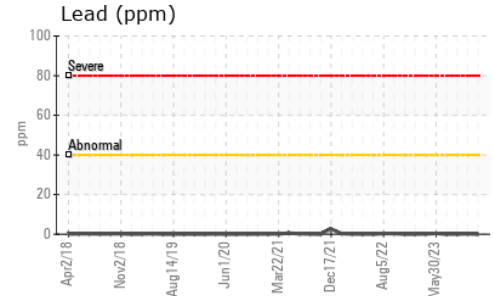
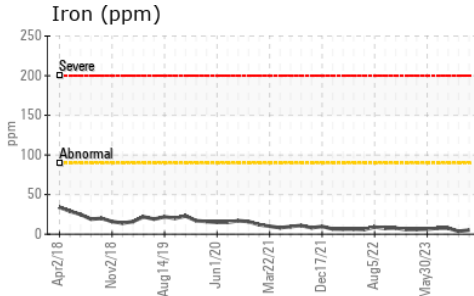


| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|-------------|------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | 17.8 | 16.8 | 24.2 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|---------|------------|------------|----------|----------|
| Emulsified Water | scalar | Visual* | >0.2 | NEG | NEG | NEG |
| Free Water | scalar | Visual* | | NEG | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|------------------|-----|---------------|------------|-------------|----------|----------|
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.4 | 14.0 | 14.1 | 14.2 |

GRAPHS



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0866485 **Received** : 27 Dec 2023
Lab Number : **02605261** **Diagnosed** : 27 Dec 2023
Unique Number : 5698346 **Diagnostician** : Wes Davis
Test Package : MOB 1

CITY OF THUNDER BAY
 AUTO MAINTENANCE STORES, 570 FORT WILLIAM ROAD
 THUNDER BAY, ON
 CA P7B 2Z8
 Contact: Sean Malcolm
 sean.malcolm@thunderbay.ca
 T: (807)684-2716
 F: (807)344-0237

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.