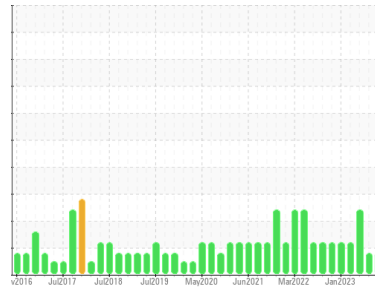




# OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Machine Id  
**CUMMINS 161**

Component  
**Rear Diesel Engine**

Fluid  
**ESSO XD-3 EXTRA 15W40 (24 LTR)**

## DIAGNOSIS

### Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

### Wear

All component wear rates are normal.

### Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

### Fluid Condition

The oil is no longer serviceable due to the presence of contaminants.

## SAMPLE INFORMATION

|               | method      | limit/base  | current            | history1    | history2    |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info |             | <b>WC0866566</b>   | WC0816412   | WC0816449   |
| Sample Date   | Client Info |             | <b>24 Oct 2023</b> | 10 Aug 2023 | 30 May 2023 |
| Machine Age   | kms         | Client Info | <b>0</b>           | 0           | 0           |
| Oil Age       | kms         | Client Info | <b>9825</b>        | 9212        | 9500        |
| Oil Changed   | Client Info |             | <b>N/A</b>         | N/A         | N/A         |
| Sample Status |             |             | <b>ABNORMAL</b>    | ABNORMAL    | SEVERE      |

## CONTAMINATION

|        | method    | limit/base | current    | history1 | history2 |
|--------|-----------|------------|------------|----------|----------|
| Glycol | WC Method |            | <b>NEG</b> | NEG      | NEG      |

## WEAR METALS

|           | method | limit/base         | current      | history1 | history2 |
|-----------|--------|--------------------|--------------|----------|----------|
| Iron      | ppm    | ASTM D5185(m) >75  | <b>36</b>    | 32       | 26       |
| Chromium  | ppm    | ASTM D5185(m) >5   | <b>1</b>     | 1        | 1        |
| Nickel    | ppm    | ASTM D5185(m) >4   | <b>&lt;1</b> | <1       | <1       |
| Titanium  | ppm    | ASTM D5185(m) >2   | <b>0</b>     | 0        | <1       |
| Silver    | ppm    | ASTM D5185(m) >2   | <b>&lt;1</b> | 0        | 0        |
| Aluminum  | ppm    | ASTM D5185(m) >15  | <b>3</b>     | 3        | 3        |
| Lead      | ppm    | ASTM D5185(m) >25  | <b>1</b>     | 1        | 1        |
| Copper    | ppm    | ASTM D5185(m) >100 | <b>2</b>     | 1        | 1        |
| Tin       | ppm    | ASTM D5185(m) >4   | <b>0</b>     | <1       | <1       |
| Antimony  | ppm    | ASTM D5185(m)      | <b>0</b>     | 0        | <1       |
| Vanadium  | ppm    | ASTM D5185(m)      | <b>0</b>     | 0        | 0        |
| Beryllium | ppm    | ASTM D5185(m)      | <b>0</b>     | 0        | 0        |
| Cadmium   | ppm    | ASTM D5185(m)      | <b>0</b>     | 0        | 0        |

## ADDITIVES

|            | method | limit/base         | current      | history1 | history2 |
|------------|--------|--------------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185(m)      | <b>62</b>    | 53       | 35       |
| Barium     | ppm    | ASTM D5185(m)      | <b>&lt;1</b> | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185(m)      | <b>1</b>     | 7        | 38       |
| Manganese  | ppm    | ASTM D5185(m)      | <b>0</b>     | <1       | <1       |
| Magnesium  | ppm    | ASTM D5185(m)      | <b>24</b>    | 88       | 489      |
| Calcium    | ppm    | ASTM D5185(m) 3780 | <b>2112</b>  | 2057     | 1716     |
| Phosphorus | ppm    | ASTM D5185(m) 1370 | <b>873</b>   | 910      | 1024     |
| Zinc       | ppm    | ASTM D5185(m) 1500 | <b>1077</b>  | 1066     | 1136     |
| Sulfur     | ppm    | ASTM D5185(m) 3800 | <b>2584</b>  | 2638     | 2666     |
| Lithium    | ppm    | ASTM D5185(m)      | <b>&lt;1</b> | <1       | <1       |

## CONTAMINANTS

|           | method | limit/base         | current      | history1 | history2 |
|-----------|--------|--------------------|--------------|----------|----------|
| Silicon   | ppm    | ASTM D5185(m) >25  | <b>6</b>     | 5        | 5        |
| Sodium    | ppm    | ASTM D5185(m) >192 | <b>4</b>     | 3        | 2        |
| Potassium | ppm    | ASTM D5185(m) >20  | <b>5</b>     | 6        | 2        |
| Fuel      | %      | ASTM D7593* >3.0   | <b>▲ 5.9</b> | ▲ 4.4    | ■ 6.6    |

## INFRA-RED

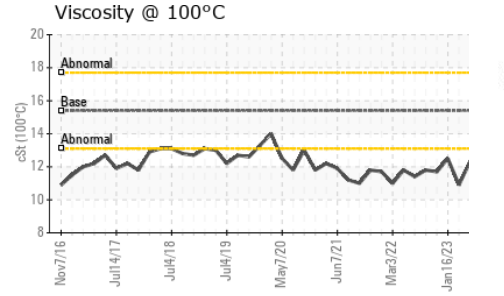
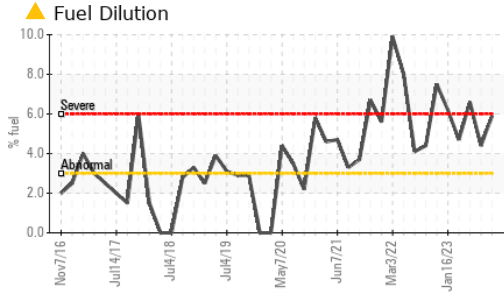
|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | ASTM D7844* >6  | <b>1.3</b>  | 1.1      | 1        |
| Nitration | Abs/cm   | ASTM D7624* >20 | <b>13.1</b> | 13.2     | 11.8     |
| Sulfation | Abs/.1mm | ASTM D7415* >30 | <b>33.3</b> | 36.5     | 27.9     |

## FLUID DEGRADATION

|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | ASTM D7414* >25 | <b>36.5</b> | 42.9     | 28.9     |



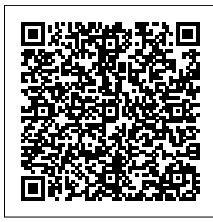
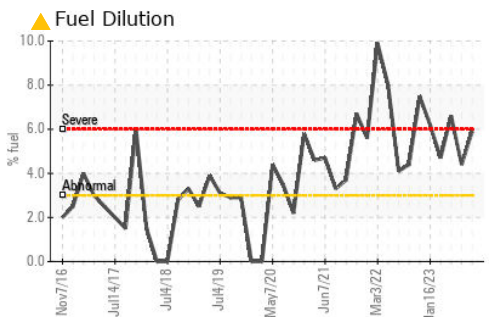
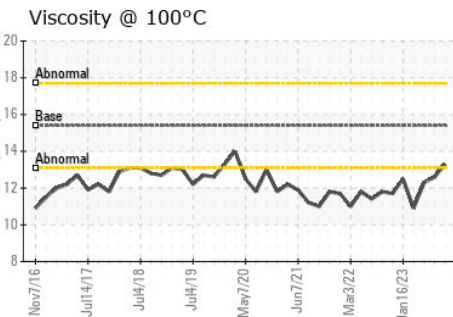
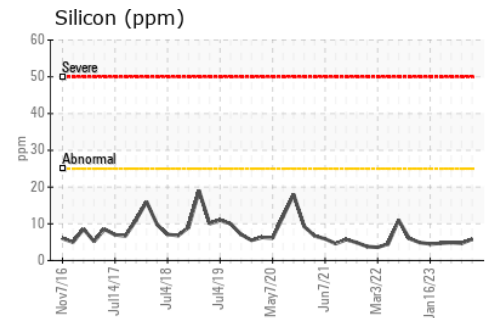
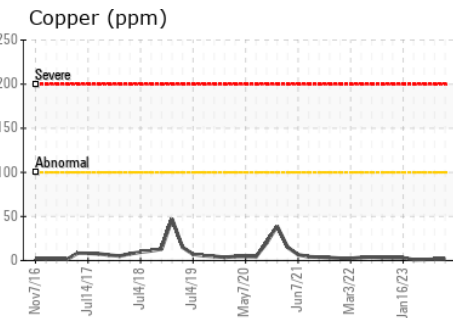
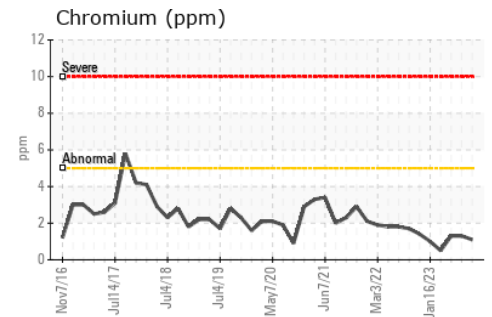
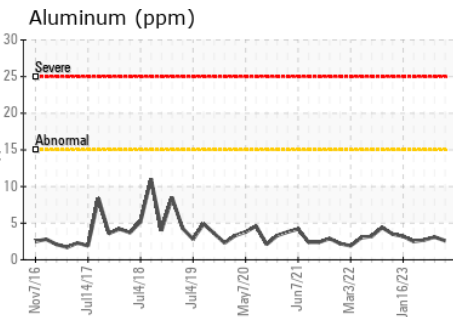
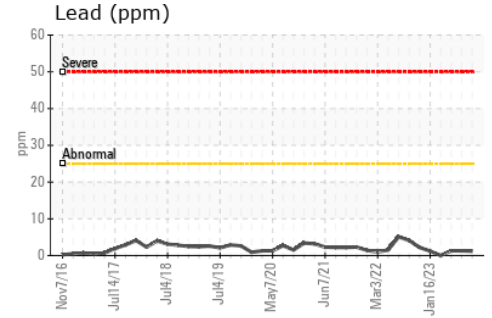
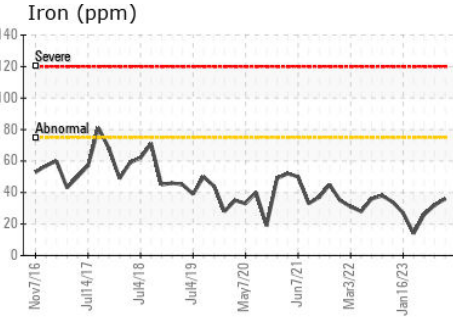
# OIL ANALYSIS REPORT



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

| FLUID PROPERTIES | method | limit/base    | current | history1    | history2 |
|------------------|--------|---------------|---------|-------------|----------|
| Visc @ 100°C     | cSt    | ASTM D7279(m) | 15.4    | <b>13.3</b> | 12.6     |

### GRAPHS



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0866566 **Received** : 30 Oct 2023  
**Lab Number** : **02592592** **Diagnosed** : 31 Oct 2023  
**Unique Number** : 5669671 **Diagnostician** : Kevin Marson  
**Test Package** : MOB 1 ( Additional Tests: PercentFuel )

**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.