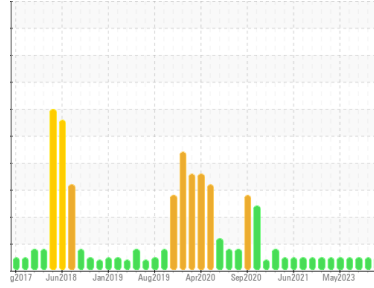


# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area

**Cranes**

Machine Id

**Crane - Fwd Slewing Gearbox #3 (S/N Sample Tag MA-04003-S9)**

Component

**Gearbox**

Fluid

**PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

## SAMPLE INFORMATION

| method        | limit/base  | current            | history1    | history2    |
|---------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | <b>PC</b>          | PC          | PC0076452   |
| Sample Date   | Client Info | <b>20 Mar 2024</b> | 24 Jan 2024 | 04 Oct 2023 |
| Machine Age   | hrs         | <b>0</b>           | 0           | 0           |
| Oil Age       | hrs         | <b>0</b>           | 0           | 0           |
| Oil Changed   | Client Info | <b>N/A</b>         | N/A         | N/A         |
| Sample Status |             | <b>NORMAL</b>      | NORMAL      | NORMAL      |

## CONTAMINATION

| method | limit/base     | current    | history1 | history2 |
|--------|----------------|------------|----------|----------|
| Water  | WC Method >0.2 | <b>NEG</b> | NEG      | NEG      |

## WEAR METALS

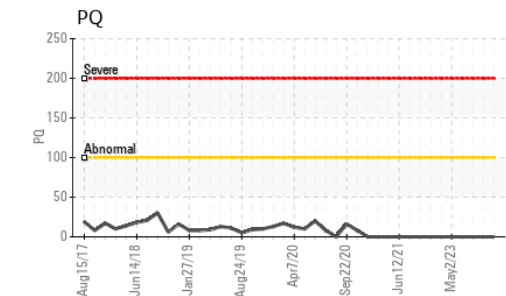
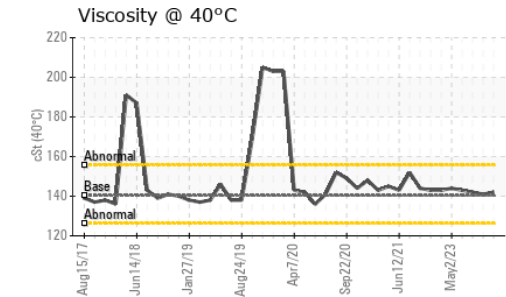
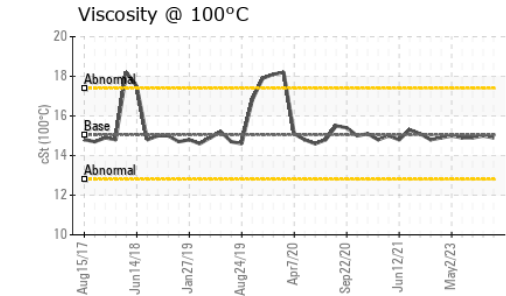
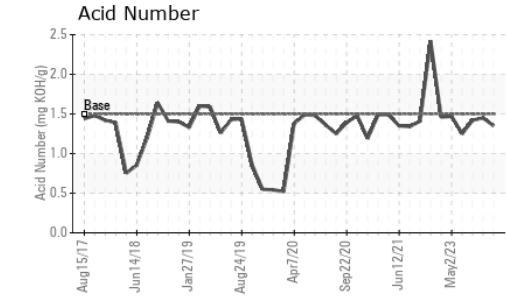
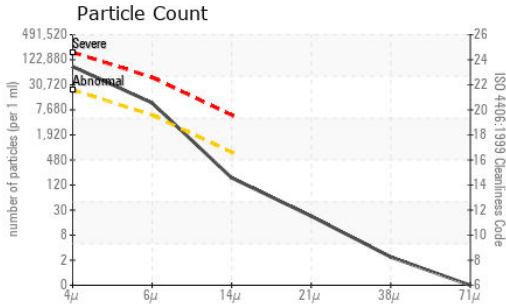
| method    | limit/base             | current      | history1 | history2 |
|-----------|------------------------|--------------|----------|----------|
| PQ        | ASTM D8184*            | <b>0</b>     | 0        | 0        |
| Iron      | ppm ASTM D5185(m) >150 | <b>4</b>     | 6        | 6        |
| Chromium  | ppm ASTM D5185(m) >10  | <b>0</b>     | 0        | 0        |
| Nickel    | ppm ASTM D5185(m) >10  | <b>0</b>     | 0        | 0        |
| Titanium  | ppm ASTM D5185(m)      | <b>0</b>     | 0        | 0        |
| Silver    | ppm ASTM D5185(m)      | <b>0</b>     | 0        | <1       |
| Aluminum  | ppm ASTM D5185(m) >5   | <b>0</b>     | <1       | 0        |
| Lead      | ppm ASTM D5185(m) >65  | <b>0</b>     | 0        | 0        |
| Copper    | ppm ASTM D5185(m) >80  | <b>&lt;1</b> | <1       | <1       |
| Tin       | ppm ASTM D5185(m) >8   | <b>0</b>     | 0        | 0        |
| Antimony  | ppm ASTM D5185(m) >5   | <b>0</b>     | 0        | 0        |
| 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) 240   | <b>224</b>   | 236      | 243      |
| Barium     | ppm ASTM D5185(m) 1     | <b>0</b>     | 0        | <1       |
| Molybdenum | ppm ASTM D5185(m) 0.0   | <b>0</b>     | 0        | 0        |
| Manganese  | ppm ASTM D5185(m)       | <b>0</b>     | 0        | 0        |
| Magnesium  | ppm ASTM D5185(m) 2     | <b>1</b>     | <1       | <1       |
| Calcium    | ppm ASTM D5185(m) 6     | <b>3</b>     | 8        | 3        |
| Phosphorus | ppm ASTM D5185(m) 1000  | <b>890</b>   | 933      | 881      |
| Zinc       | ppm ASTM D5185(m) 3     | <b>7</b>     | 3        | 4        |
| Sulfur     | ppm ASTM D5185(m) 19400 | <b>15903</b> | 16696    | 16217    |
| Lithium    | ppm ASTM D5185(m)       | <b>&lt;1</b> | <1       | <1       |

## CONTAMINANTS

| method    | limit/base            | current      | history1 | history2 |
|-----------|-----------------------|--------------|----------|----------|
| Silicon   | ppm ASTM D5185(m) >20 | <b>2</b>     | 3        | 4        |
| Sodium    | ppm ASTM D5185(m)     | <b>&lt;1</b> | <1       | <1       |
| Potassium | ppm ASTM D5185(m) >20 | <b>1</b>     | 1        | <1       |



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : 02626219  
**Unique Number** : 5759351  
**Test Package** : MAR 2 ( Additional Tests: KV100, PQ, PrtCount, TAN Man, VI )

**Received** : 02 Apr 2024  
**Tested** : 03 Apr 2024  
**Diagnosed** : 03 Apr 2024 - Kevin Marson

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.

| FLUID CLEANLINESS |              | method    | limit/base      | current  | history1 | history2 |
|-------------------|--------------|-----------|-----------------|----------|----------|----------|
| Particles >4µm    | ASTM D7647   | >20000    | <b>72848</b>    | 115233   | 72771    |          |
| Particles >6µm    | ASTM D7647   | >5000     | <b>9770</b>     | 23041    | 10059    |          |
| Particles >14µm   | ASTM D7647   | >640      | <b>157</b>      | 331      | 113      |          |
| Particles >21µm   | ASTM D7647   | >160      | <b>19</b>       | 32       | 18       |          |
| Particles >38µm   | ASTM D7647   | >40       | <b>2</b>        | 3        | 5        |          |
| Particles >71µm   | ASTM D7647   | >10       | <b>0</b>        | 2        | 4        |          |
| Oil Cleanliness   | ISO 4406 (c) | >21/19/16 | <b>23/20/14</b> | 24/22/16 | 23/21/14 |          |

| FLUID DEGRADATION |          | method     | limit/base | current     | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN)  | mg KOH/g | ASTM D974* | 1.5        | <b>1.35</b> | 1.45     | 1.42     |

| VISUAL           |        | method  | limit/base | current      | history1 | history2 |
|------------------|--------|---------|------------|--------------|----------|----------|
| White Metal      | scalar | Visual* | NONE       | <b>NONE</b>  | NONE     | NONE     |
| Yellow Metal     | scalar | Visual* | NONE       | <b>NONE</b>  | NONE     | NONE     |
| Precipitate      | scalar | Visual* | NONE       | <b>NONE</b>  | NONE     | NONE     |
| Silt             | scalar | Visual* | NONE       | <b>NONE</b>  | NONE     | NONE     |
| Debris           | scalar | Visual* | NONE       | <b>NONE</b>  | NONE     | NONE     |
| Sand/Dirt        | scalar | Visual* | NONE       | <b>NONE</b>  | NONE     | NONE     |
| Appearance       | scalar | Visual* | NORML      | <b>NORML</b> | NORML    | NORML    |
| Odor             | scalar | Visual* | NORML      | <b>NORML</b> | NORML    | NORML    |
| Emulsified Water | scalar | Visual* | >0.2       | <b>NEG</b>   | NEG      | NEG      |
| Free Water       | scalar | Visual* |            | <b>NEG</b>   | NEG      | NEG      |

| FLUID PROPERTIES     |       | method        | limit/base | current     | history1 | history2 |
|----------------------|-------|---------------|------------|-------------|----------|----------|
| Visc @ 40°C          | cSt   | ASTM D7279(m) | 140.3      | <b>142</b>  | 141      | 142      |
| Visc @ 100°C         | cSt   | ASTM D7279(m) | 15.05      | <b>14.9</b> | 15.0     | 14.9     |
| Viscosity Index (VI) | Scale | ASTM D2270*   | 109        | <b>105</b>  | 107      | 105      |

| SAMPLE IMAGES |  | method | limit/base | current | history1 | history2 |
|---------------|--|--------|------------|---------|----------|----------|
| Color         |  |        |            |         |          |          |
| Bottom        |  |        |            |         |          |          |