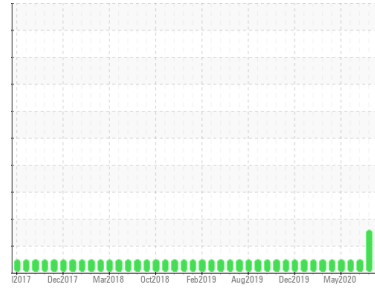


Area  
**Fwd Machinery Space [450188488]**  
Machine Id  
**Thruster Fwd Aft - Lubrication System (S/N Sample Tag CL-06004-S1)**  
Component  
**Lube System**  
Fluid  
**PETRO CANADA ENERGOL GR-XP ISO 150 (5000 LTR)**



**DIAGNOSIS**

**Recommendation**  
Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.

**Wear**  
Component wear rates appear to be normal (unconfirmed).

**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 acceptable for the time in service (unconfirmed).

**SAMPLE INFORMATION**

| method        | limit/base  | current            | history1    | history2    |
|---------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | <b>PC0062022</b>   | PC          | PC          |
| Sample Date   | Client Info | <b>14 Aug 2023</b> | 05 Feb 2023 | 06 Jul 2020 |
| Machine Age   | hrs         | Client Info        | 0           | 0           |
| Oil Age       | hrs         | Client Info        | 0           | 0           |
| Oil Changed   | Client Info | <b>N/A</b>         | N/A         | N/A         |
| Sample Status |             | <b>NORMAL</b>      | ATTENTION   | NORMAL      |

**WEAR METALS**

| method    | limit/base  | current           | history1     | history2 |    |
|-----------|-------------|-------------------|--------------|----------|----|
| PQ        | ASTM D8184* | <b>0</b>          | 0            | 0        |    |
| Iron      | ppm         | ASTM D5185(m) >20 | <b>&lt;1</b> | <1       | 2  |
| Chromium  | ppm         | ASTM D5185(m) >10 | <b>0</b>     | 0        | 0  |
| Nickel    | ppm         | ASTM D5185(m) >10 | <b>&lt;1</b> | <1       | <1 |
| Titanium  | ppm         | ASTM D5185(m)     | <b>0</b>     | 0        | 0  |
| Silver    | ppm         | ASTM D5185(m)     | <b>&lt;1</b> | 0        | 0  |
| Aluminum  | ppm         | ASTM D5185(m) >10 | <b>0</b>     | <1       | <1 |
| Lead      | ppm         | ASTM D5185(m) >20 | <b>0</b>     | 0        | 0  |
| Copper    | ppm         | ASTM D5185(m) >20 | <b>&lt;1</b> | 0        | <1 |
| Tin       | ppm         | ASTM D5185(m) >10 | <b>0</b>     | 0        | 0  |
| Antimony  | ppm         | ASTM D5185(m)     | <b>0</b>     | <1       | <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>13</b>    | 15       | <1    |
| Barium     | ppm        | ASTM D5185(m) | <b>0</b>     | 0        | 0     |
| Molybdenum | ppm        | ASTM D5185(m) | <b>0</b>     | 0        | <1    |
| Manganese  | ppm        | ASTM D5185(m) | <b>0</b>     | 0        | <1    |
| Magnesium  | ppm        | ASTM D5185(m) | <b>&lt;1</b> | 0        | <1    |
| Calcium    | ppm        | ASTM D5185(m) | <b>15</b>    | ▲ 30     | 3     |
| Phosphorus | ppm        | ASTM D5185(m) | <b>183</b>   | 191      | 288   |
| Zinc       | ppm        | ASTM D5185(m) | <b>4</b>     | 4        | 19    |
| Sulfur     | ppm        | ASTM D5185(m) | <b>13538</b> | ▲ 15033  | 10878 |
| Lithium    | ppm        | ASTM D5185(m) | <b>&lt;1</b> | <1       | <1    |

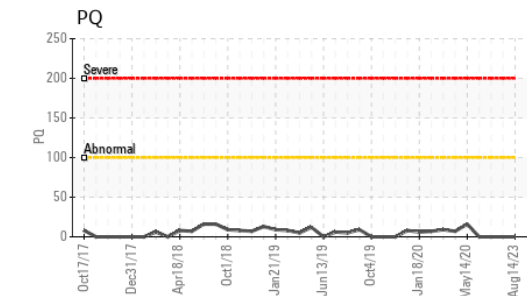
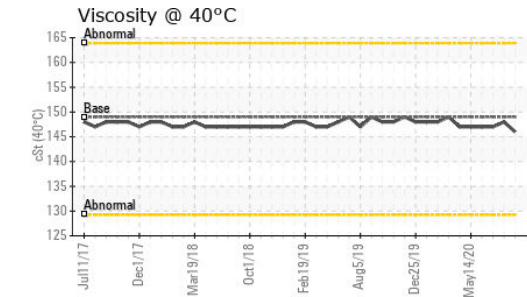
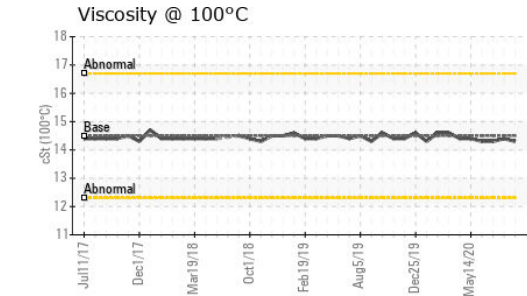
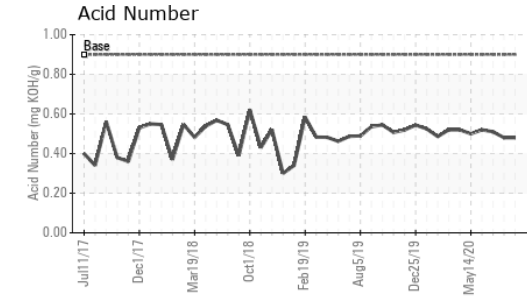
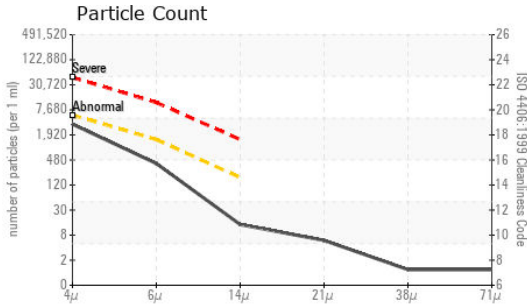
**CONTAMINANTS**

| method    | limit/base | current           | history1     | history2 |    |
|-----------|------------|-------------------|--------------|----------|----|
| Silicon   | ppm        | ASTM D5185(m) >15 | <b>1</b>     | <1       | 1  |
| Sodium    | ppm        | ASTM D5185(m)     | <b>0</b>     | 0        | 0  |
| Potassium | ppm        | ASTM D5185(m) >20 | <b>&lt;1</b> | <1       | <1 |

**FLUID CLEANLINESS**

| method          | limit/base   | current   | history1        | history2   |          |
|-----------------|--------------|-----------|-----------------|------------|----------|
| Particles >4µm  | ASTM D7647   | >5000     | <b>3043</b>     | ▲ 7078     | 3552     |
| Particles >6µm  | ASTM D7647   | >1300     | <b>348</b>      | 532        | 790      |
| Particles >14µm | ASTM D7647   | >160      | <b>12</b>       | 14         | 47       |
| Particles >21µm | ASTM D7647   | >40       | <b>5</b>        | 4          | 12       |
| Particles >38µm | ASTM D7647   | >10       | <b>1</b>        | 1          | 0        |
| Particles >71µm | ASTM D7647   | >3        | <b>1</b>        | 0          | 0        |
| Oil Cleanliness | ISO 4406 (c) | >19/17/14 | <b>19/16/11</b> | ▲ 20/16/11 | 19/17/13 |

# OIL ANALYSIS REPORT

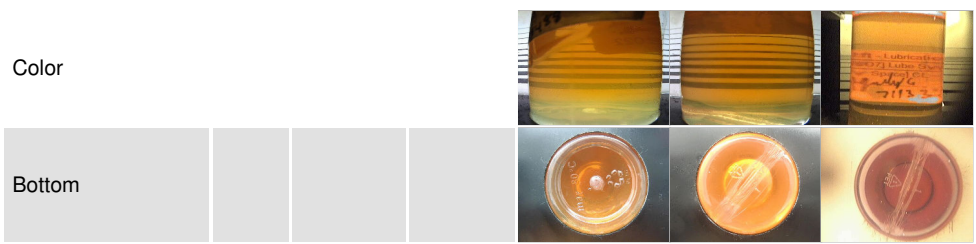


| FLUID DEGRADATION |          | method     | limit/base | current     | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN)  | mg KOH/g | ASTM D974* | 0.9        | <b>0.48</b> | 0.48     | 0.51     |

| 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* | >0.05      | <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) | 149        | <b>146</b>  | 148      | 147      |
| Visc @ 100°C         | cSt   | ASTM D7279(m) | 14.5       | <b>14.3</b> | 14.4     | 14.3     |
| Viscosity Index (VI) | Scale | ASTM D2270*   |            | <b>95</b>   | 94       | 94       |

## SAMPLE IMAGES



Color

Bottom



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC0062022 **Received** : 13 Sep 2023  
**Lab Number** : **02582300** **Diagnosed** : 15 Sep 2023  
**Unique Number** : 5643365 **Diagnostician** : Kevin Marson  
**Test Package** : MAR 2 ( Additional Tests: KV100, PQ, TAN Man, VI )

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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