

Area

**Aft Machinery Space**

Machine Id

**Thruster Aft Port - Seal Oil System (S/N Sample Tag CL-06002-S3)**

Component

**Sealing System**

Fluid

**PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)**

**DIAGNOSIS**

**Recommendation**

We recommend you service the filters on this component. Resample at the next service interval to monitor.

**Wear**

All component wear rates are normal.

**Contamination**

There is a light amount of silt (particulates < 14 microns in size) present in the fluid.

**Fluid Condition**

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

| SAMPLE INFORMATION |             | method      | limit/base | current            | history1    | history2    |
|--------------------|-------------|-------------|------------|--------------------|-------------|-------------|
| Sample Number      | Client Info |             |            | <b>PC</b>          | PC          | PC0080542   |
| Sample Date        | Client Info |             |            | <b>30 Mar 2024</b> | 26 Feb 2024 | 29 Jan 2024 |
| Machine Age        | hrs         | Client Info |            | <b>0</b>           | 0           | 0           |
| Oil Age            | hrs         | Client Info |            | <b>0</b>           | 0           | 0           |
| Oil Changed        | Client Info |             |            | <b>N/A</b>         | N/A         | N/A         |
| Sample Status      |             |             |            | <b>ATTENTION</b>   | ABNORMAL    | ABNORMAL    |

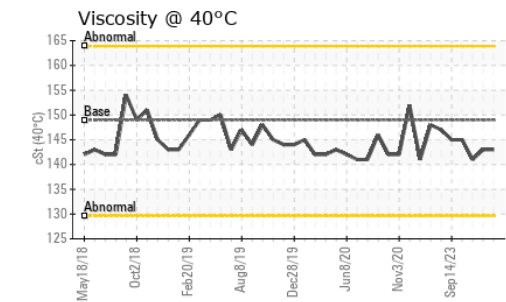
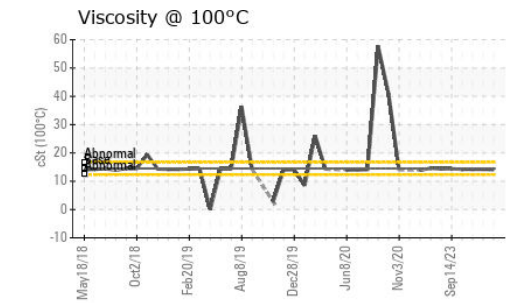
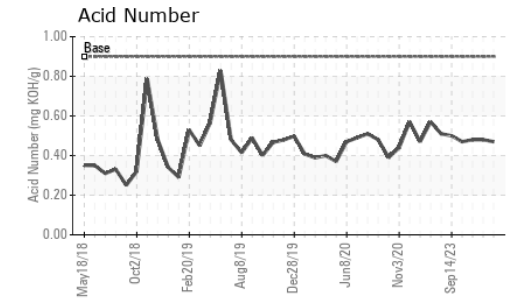
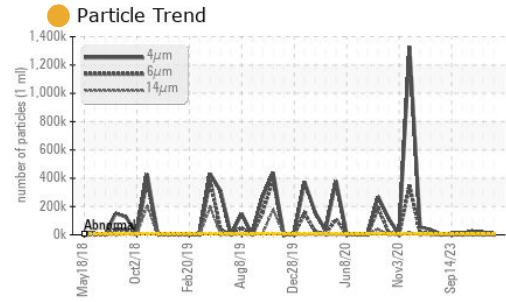
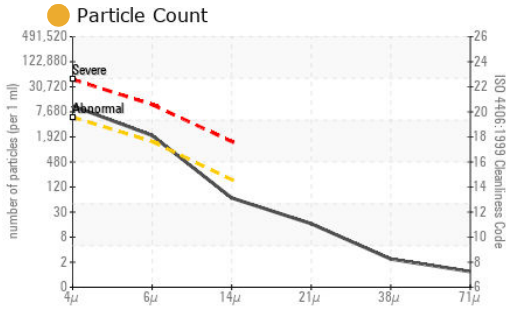
| CONTAMINATION |           | method | limit/base | current    | history1 | history2 |
|---------------|-----------|--------|------------|------------|----------|----------|
| Water         | WC Method |        |            | <b>NEG</b> | NEG      | NEG      |

| WEAR METALS |     | method        | limit/base | current  | history1 | history2 |
|-------------|-----|---------------|------------|----------|----------|----------|
| PQ          |     | ASTM D8184*   |            | <b>0</b> | 0        | 0        |
| Iron        | ppm | ASTM D5185(m) | >100       | <b>6</b> | 7        | 14       |
| Chromium    | ppm | ASTM D5185(m) | >3         | <b>0</b> | 0        | 0        |
| Nickel      | ppm | ASTM D5185(m) | >8         | <b>0</b> | <1       | 0        |
| Titanium    | ppm | ASTM D5185(m) |            | <b>0</b> | 0        | 0        |
| Silver      | ppm | ASTM D5185(m) |            | <b>0</b> | 0        | 0        |
| Aluminum    | ppm | ASTM D5185(m) | >3         | <b>0</b> | <1       | <1       |
| Lead        | ppm | ASTM D5185(m) |            | <b>0</b> | 0        | 0        |
| Copper      | ppm | ASTM D5185(m) | >3         | <b>0</b> | 0        | 0        |
| Tin         | ppm | ASTM D5185(m) |            | <b>0</b> | 0        | 0        |
| Antimony    | ppm | ASTM D5185(m) |            | <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) |            | <b>11</b>    | 13       | 8        |
| Barium     | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Molybdenum | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Manganese  | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Magnesium  | ppm | ASTM D5185(m) |            | <b>&lt;1</b> | 0        | <1       |
| Calcium    | ppm | ASTM D5185(m) |            | <b>&lt;1</b> | 4        | 2        |
| Phosphorus | ppm | ASTM D5185(m) |            | <b>166</b>   | 172      | 168      |
| Zinc       | ppm | ASTM D5185(m) |            | <b>5</b>     | 6        | 5        |
| Sulfur     | ppm | ASTM D5185(m) |            | <b>7969</b>  | 8580     | 8492     |
| 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>1</b>     | 3        | 3        |
| Sodium       | ppm | ASTM D5185(m) |            | <b>1</b>     | 2        | 3        |
| Potassium    | ppm | ASTM D5185(m) | >20        | <b>&lt;1</b> | <1       | <1       |

# OIL ANALYSIS REPORT



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : 02631765  
**Unique Number** : 5772918  
**Test Package** : MAR 2 ( Additional Tests: KV100, PQ, PrtCount, TAN Man, VI )

**Received** : 26 Apr 2024  
**Tested** : 29 Apr 2024  
**Diagnosed** : 29 Apr 2024 - Kevin Marson

**Suncor - Terra Nova Projects**  
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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.

| FLUID CLEANLINESS | method       | limit/base | current    | history1   | history2   |
|-------------------|--------------|------------|------------|------------|------------|
| Particles >4µm    | ASTM D7647   | >5000      | ● 9280     | ▲ 17970    | ▲ 25740    |
| Particles >6µm    | ASTM D7647   | >1300      | ● 1818     | ▲ 3168     | ▲ 2988     |
| Particles >14µm   | ASTM D7647   | >160       | ● 58       | 85         | 121        |
| Particles >21µm   | ASTM D7647   | >40        | ● 14       | 16         | 24         |
| Particles >38µm   | ASTM D7647   | >10        | ● 2        | 4          | 1          |
| Particles >71µm   | ASTM D7647   | >3         | ● 1        | 2          | 0          |
| Oil Cleanliness   | ISO 4406 (c) | >19/17/14  | ● 20/18/13 | ▲ 21/19/14 | ▲ 22/19/14 |

| FLUID DEGRADATION | method              | limit/base | current | history1 | history2 |
|-------------------|---------------------|------------|---------|----------|----------|
| Acid Number (AN)  | mg KOH/g ASTM D974* | 0.9        | ● 0.47  | 0.48     | 0.48     |

| VISUAL           | method         | limit/base | current | history1 | history2 |
|------------------|----------------|------------|---------|----------|----------|
| White Metal      | scalar Visual* | NONE       | ● NONE  | NONE     | NONE     |
| Yellow Metal     | scalar Visual* | NONE       | ● NONE  | NONE     | NONE     |
| Precipitate      | scalar Visual* | NONE       | ● NONE  | NONE     | NONE     |
| Silt             | scalar Visual* | NONE       | ● NONE  | NONE     | NONE     |
| Debris           | scalar Visual* | NONE       | ● NONE  | NONE     | VLITE    |
| Sand/Dirt        | scalar Visual* | NONE       | ● NONE  | NONE     | NONE     |
| Appearance       | scalar Visual* | NORML      | ● NORML | NORML    | NORML    |
| Odor             | scalar Visual* | NORML      | ● NORML | NORML    | NORML    |
| Emulsified Water | scalar Visual* |            | ● NEG   | .2%      | NEG      |
| Free Water       | scalar Visual* |            | ● NEG   | NEG      | NEG      |

| FLUID PROPERTIES     | method            | limit/base | current | history1 | history2 |
|----------------------|-------------------|------------|---------|----------|----------|
| Visc @ 40°C          | cSt ASTM D7279(m) | 149        | ● 143   | 143      | 141      |
| Visc @ 100°C         | cSt ASTM D7279(m) | 14.5       | ● 14.1  | 14.2     | 14.2     |
| Viscosity Index (VI) | Scale ASTM D2270* |            | ● 95    | 96       | 97       |

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

