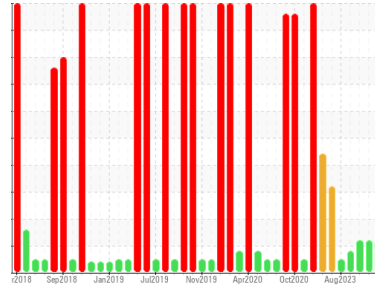


Area
Aft Machinery Space [450270725]
Machine Id
Thruster Aft Port - Seal Oil System (S/N Sample Tag CL-06002-S3)
Component
Sealing System
Fluid
PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)



DIAGNOSIS

Recommendation
We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
There is a moderate amount of silt (particulates < 14 microns in size) present in the fluid. The water content is negligible.

Fluid Condition
The AN level is acceptable for this fluid. The fluid is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION

| method | limit/base | current | history1 | history2 |
|---------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | PC | PC0080542 | PC |
| Sample Date | Client Info | 26 Feb 2024 | 29 Jan 2024 | 04 Jan 2024 |
| Machine Age | hrs | 0 | 0 | 0 |
| Oil Age | hrs | 0 | 0 | 0 |
| Oil Changed | Client Info | N/A | N/A | N/A |
| Sample Status | | ABNORMAL | ABNORMAL | ABNORMAL |

WEAR METALS

| method | limit/base | current | history1 | history2 |
|-----------|------------------------|--------------|----------|----------|
| PQ | ASTM D8184* | 0 | 0 | 0 |
| Iron | ppm ASTM D5185(m) >100 | 7 | 14 | 6 |
| Chromium | ppm ASTM D5185(m) >3 | 0 | 0 | 0 |
| Nickel | ppm ASTM D5185(m) >8 | <1 | 0 | <1 |
| Titanium | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Silver | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Aluminum | ppm ASTM D5185(m) >3 | <1 | <1 | <1 |
| Lead | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Copper | ppm ASTM D5185(m) >3 | 0 | 0 | <1 |
| Tin | ppm ASTM D5185(m) | 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) | 13 | 8 | 9 |
| Barium | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Molybdenum | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Manganese | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Magnesium | ppm ASTM D5185(m) | 0 | <1 | <1 |
| Calcium | ppm ASTM D5185(m) | 4 | 2 | 2 |
| Phosphorus | ppm ASTM D5185(m) | 172 | 168 | 170 |
| Zinc | ppm ASTM D5185(m) | 6 | 5 | 5 |
| Sulfur | ppm ASTM D5185(m) | 8580 | 8492 | 8491 |
| Lithium | ppm ASTM D5185(m) | <1 | <1 | <1 |

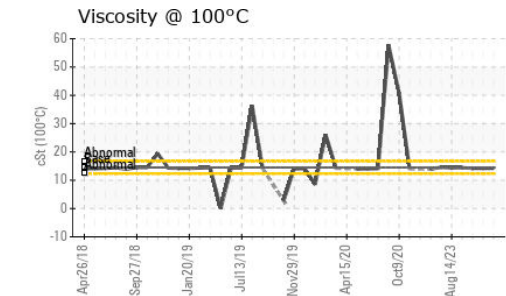
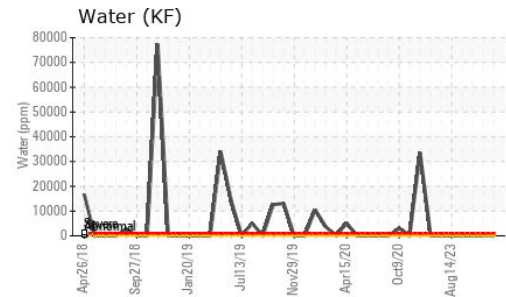
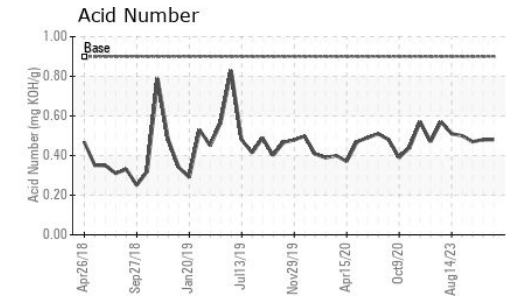
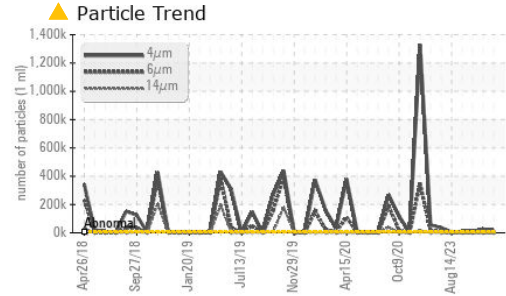
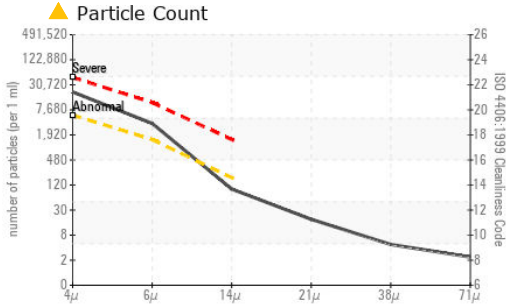
CONTAMINANTS

| method | limit/base | current | history1 | history2 |
|-----------|-----------------------|--------------|----------|----------|
| Silicon | ppm ASTM D5185(m) >25 | 3 | 3 | 2 |
| Sodium | ppm ASTM D5185(m) | 2 | 3 | 3 |
| Potassium | ppm ASTM D5185(m) >20 | <1 | <1 | <1 |
| Water | % ASTM D6304* | 0.003 | --- | --- |
| ppm Water | ppm ASTM D6304* | 33 | --- | --- |

FLUID CLEANLINESS

| method | limit/base | current | history1 | history2 |
|-----------------|------------------------|-------------------|------------|------------|
| Particles >4µm | ASTM D7647 >5000 | ▲ 17970 | ▲ 25740 | ▲ 10383 |
| Particles >6µm | ASTM D7647 >1300 | ▲ 3168 | ▲ 2988 | ● 1512 |
| Particles >14µm | ASTM D7647 >160 | 85 | 121 | 37 |
| Particles >21µm | ASTM D7647 >40 | 16 | 24 | 11 |
| Particles >38µm | ASTM D7647 >10 | 4 | 1 | 3 |
| Particles >71µm | ASTM D7647 >3 | 2 | 0 | 1 |
| Oil Cleanliness | ISO 4406 (c) >19/17/14 | ▲ 21/19/14 | ▲ 22/19/14 | ▲ 21/18/12 |

OIL ANALYSIS REPORT



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC **Received** : 18 Mar 2024
Lab Number : 02622800 **Tested** : 20 Mar 2024
Unique Number : 5747919 **Diagnosed** : 20 Mar 2024 - Kevin Marson
Test Package : MAR 2 (Additional Tests: KF, KV100, PQ, PrtCount, TAN Man, VI)

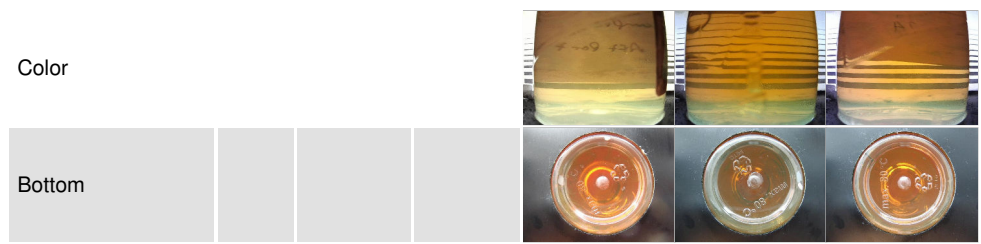
To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

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

| 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 | VLITE | NONE |
| 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* | | .2% | NEG | 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 | 141 | 145 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 14.5 | 14.2 | 14.2 | 14.2 |
| Viscosity Index (VI) | Scale | ASTM D2270* | | 96 | 97 | 94 |

SAMPLE IMAGES



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