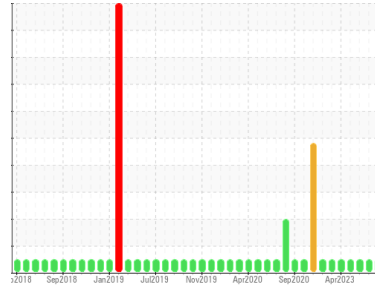


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Aft Machinery Space [450210622]
Machine Id
Thruster Aft Starboard - Steering System (S/N Sample Tag CL-06003-S2)
Component
Hydraulic System
Fluid
PETRO CANADA HYDREX MV 36 (200 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 | PC0076364 | PC0052573 | PC |
| Sample Date | Client Info | 15 Oct 2023 | 14 Aug 2023 | 19 Jul 2023 |
| Machine Age | hrs | Client Info | 0 | 0 |
| Oil Age | hrs | Client Info | 0 | 0 |
| Oil Changed | Client Info | N/A | N/A | N/A |
| Sample Status | | NORMAL | NORMAL | NORMAL |

CONTAMINATION

| method | limit/base | current | history1 | history2 |
|--------|-----------------|------------|----------|----------|
| Water | WC Method >0.05 | NEG | NEG | NEG |

WEAR METALS

| method | limit/base | current | history1 | history2 |
|-----------|-----------------------|--------------|----------|----------|
| PQ | ASTM D8184* | 1 | 0 | 10 |
| Iron | ppm ASTM D5185(m) >20 | 3 | 3 | 3 |
| Chromium | ppm ASTM D5185(m) >10 | 0 | 0 | 0 |
| Nickel | ppm ASTM D5185(m) >10 | <1 | <1 | <1 |
| Titanium | ppm ASTM D5185(m) | 0 | 0 | 0 |
| Silver | ppm ASTM D5185(m) | <1 | 0 | 0 |
| Aluminum | ppm ASTM D5185(m) >10 | 0 | 0 | <1 |
| Lead | ppm ASTM D5185(m) >20 | <1 | <1 | <1 |
| Copper | ppm ASTM D5185(m) >20 | 7 | 7 | 6 |
| Tin | ppm ASTM D5185(m) >10 | 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 |

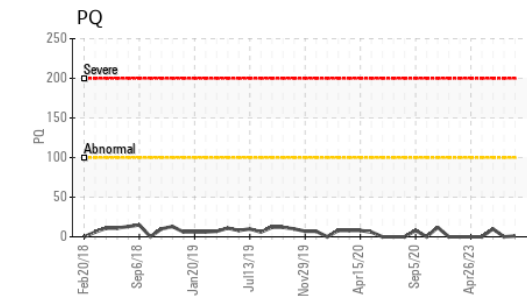
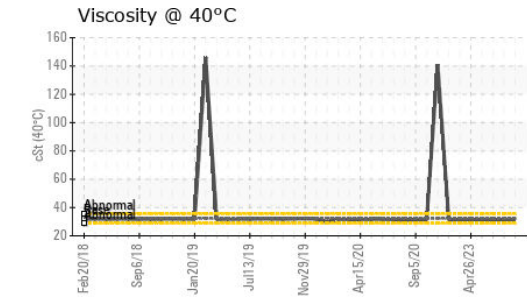
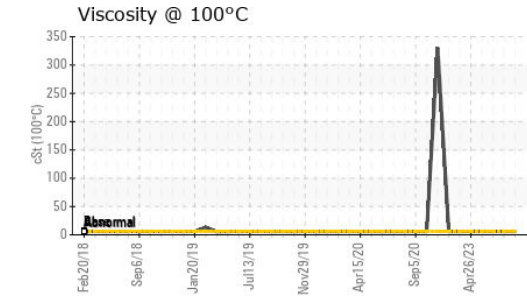
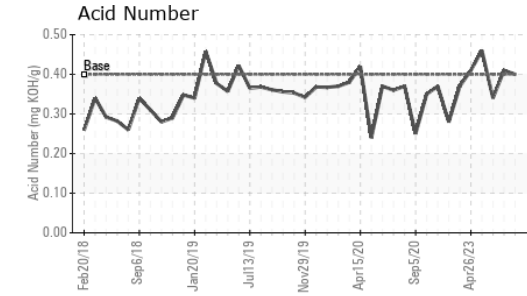
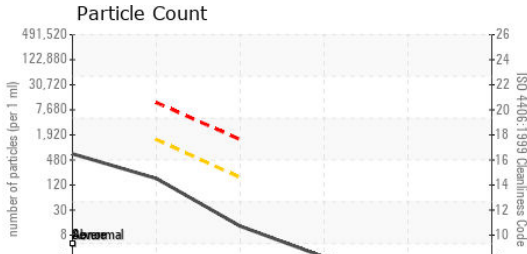
ADDITIVES

| method | limit/base | current | history1 | history2 |
|------------|-----------------------|--------------|----------|----------|
| Boron | ppm ASTM D5185(m) 0 | <1 | <1 | <1 |
| Barium | ppm ASTM D5185(m) 0 | <1 | 0 | 0 |
| Molybdenum | ppm ASTM D5185(m) 0 | 0 | 0 | 0 |
| Manganese | ppm ASTM D5185(m) 1 | 0 | 0 | 0 |
| Magnesium | ppm ASTM D5185(m) 0 | 0 | <1 | <1 |
| Calcium | ppm ASTM D5185(m) 135 | 69 | 71 | 69 |
| Phosphorus | ppm ASTM D5185(m) 236 | 307 | 349 | 334 |
| Zinc | ppm ASTM D5185(m) 317 | 370 | 391 | 377 |
| Sulfur | ppm ASTM D5185(m) 561 | 717 | 767 | 760 |
| Lithium | ppm ASTM D5185(m) | <1 | <1 | <1 |

CONTAMINANTS

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

OIL ANALYSIS REPORT



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076364 **Received** : 23 Nov 2023
Lab Number : **02598431** **Diagnosed** : 24 Nov 2023
Unique Number : 5683511 **Diagnostician** : Kevin Marson
Test Package : MAR 2 (Additional Tests: KV100, PQ, VI)


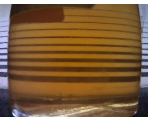
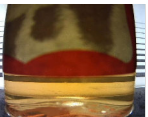



To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|-------------------|--------------|-----------|------------|-----------------|----------|----------|
| Particles >4µm | ASTM D7647 | | | 592 | 1025 | 1423 |
| Particles >6µm | ASTM D7647 | >1300 | | 152 | 163 | 271 |
| Particles >14µm | ASTM D7647 | >160 | | 11 | 19 | 17 |
| Particles >21µm | ASTM D7647 | >40 | | 2 | 6 | 5 |
| Particles >38µm | ASTM D7647 | >10 | | 1 | 0 | 0 |
| Particles >71µm | ASTM D7647 | >3 | | 0 | 0 | 0 |
| Oil Cleanliness | ISO 4406 (c) | >--/17/14 | | 16/14/11 | 17/15/11 | 18/15/11 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.40 | 0.40 | 0.41 | 0.34 |

| 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* | >0.05 | NEG | NEG | NEG |
| Free Water | scalar | Visual* | | NEG | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|----------------------|-------|---------------|------------|-------------|----------|----------|
| Visc @ 40°C | cSt | ASTM D7279(m) | 32.25 | 31.4 | 31.5 | 31.3 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 6.3 | 6 | 6 | 6 |
| Viscosity Index (VI) | Scale | ASTM D2270* | 148 | 140 | 139 | 140 |

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