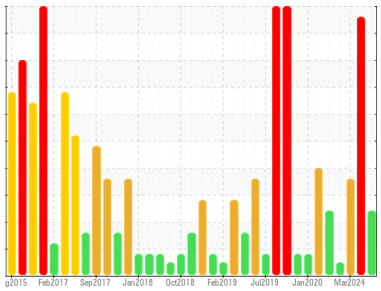
# OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
## Fwd Machinery Space [450356230]
Machine Id
## Hose Reel - Calcium Nitrate Hyd. System (S/N Sample Tag XX-42161)
Component
**Hydraulic System**
Fluid
**PETRO CANADA HYDREX MV ARCTIC 15 (100 LTR)**

## DIAGNOSIS

**Recommendation**
We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.

**Wear**
All component wear rates are normal.

**Contamination**
There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code.

**Fluid Condition**
The AN level is acceptable for this fluid. The oil 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** | PC0080193 | PC |
| Sample Date | | Client Info | | **19 Jun 2024** | 23 Apr 2024 | 01 Mar 2024 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | SEVERE | SEVERE |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >20 | **0** | 0 | <1 |
| Chromium | ppm | ASTM D5185(m) | >10 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >10 | **<1** | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **3** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >10 | **0** | 0 | <1 |
| Lead | ppm | ASTM D5185(m) | >20 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >20 | **1** | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >10 | **0** | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | | **<1** | 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 | **2** | 1 | <1 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 0 | **0** | <1 | 0 |
| Calcium | ppm | ASTM D5185(m) | 50 | **46** | 28 | 53 |
| Phosphorus | ppm | ASTM D5185(m) | 330 | **302** | 161 | 323 |
| Zinc | ppm | ASTM D5185(m) | 430 | **408** | 193 | 399 |
| Sulfur | ppm | ASTM D5185(m) | 760 | **794** | 606 | 784 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >15 | **<1** | 0 | <1 |
| Sodium | ppm | ASTM D5185(m) | | **0** | 0 | <1 |
| Potassium | ppm | ASTM D5185(m) | >20 | **2** | 9 | <1 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >1300 | ▲ **2570** | ▲ 30368 | ▲ 49547 |
| Particles >6µm | | ASTM D7647 | >320 | ▲ **826** | ▲ 7820 | ▲ 6075 |
| Particles >14µm | | ASTM D7647 | >40 | ▲ **120** | ▲ 354 | 34 |
| Particles >21µm | | ASTM D7647 | >10 | ▲ **49** | ▲ 74 | 5 |
| Particles >38µm | | ASTM D7647 | >3 | ▲ **12** | 3 | 1 |
| Particles >71µm | | ASTM D7647 | >3 | **1** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >17/15/12 | ▲ **19/17/14** | ▲ 22/20/16 | ▲ 23/20/12 |

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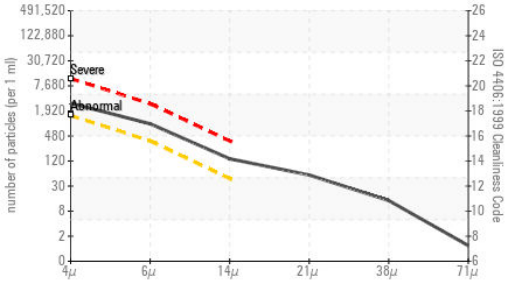
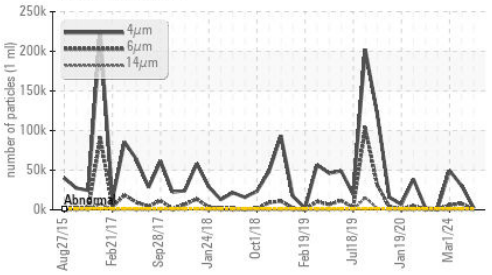
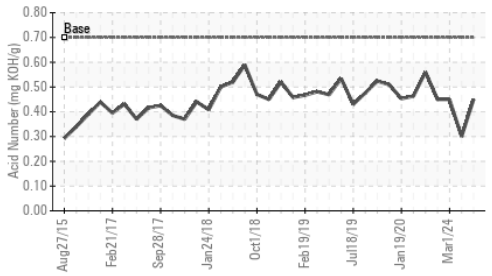
Particle Count



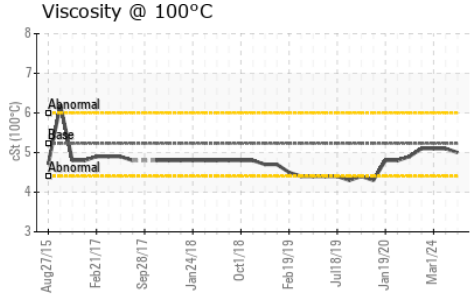

Particle Trend



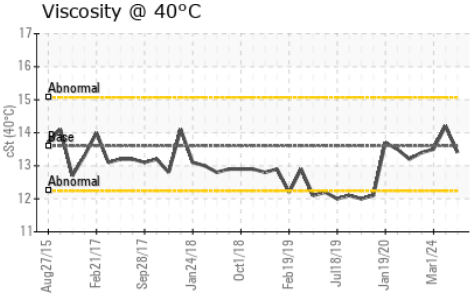

Acid Number




Viscosity @ 100°C




Viscosity @ 40°C

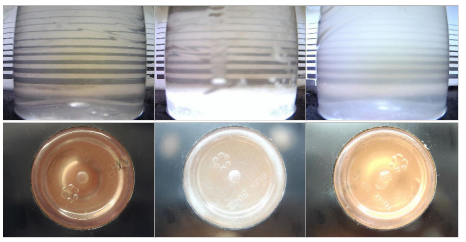



| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.70 | **0.45** | 0.30 | 0.45 |

| 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** | ▲ LIGHT | NONE |
| Silt | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Debris | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Appearance | scalar | Visual* | NORML | **NORML** | ▲ WGOIL | NORML |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.05 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | ▲ >10% | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 13.6 | **13.4** | 14.2 | 13.5 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 5.23 | **5.0** | 5.1 | 5.1 |
| Viscosity Index (VI) | Scale | ASTM D2270* | 394 | **371** | 352 | 381 |

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



ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : PC
**Lab Number** : 02648144
**Unique Number** : 5813696
**Test Package** : IND 2 ( Additional Tests: KV100, VI )

**Received** : 16 Jul 2024
**Tested** : 17 Jul 2024
**Diagnosed** : 18 Jul 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.*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