



OIL ANALYSIS REPORT

| | |
|-----------------|--------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |



Area
System de commande de gouvernail
Machine Id
12G02 Appareil a Gouverner Steering Gear (S/N 221-135-41)
Component
Hydraulic System
Fluid
PETRO CANADA HYDREX MV 32 (950 LTR)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | WC0751408 | WC0350186 | WC0350196 |
| Sample Date | | Client Info | | 23 Oct 2023 | 13 Mar 2020 | 10 Sep 2019 |
| Machine Age | hrs | Client Info | | 33 | 0 | 0 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | NORMAL | ABNORMAL | ABNORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|---------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185(m) | >20 | 0 | <1 | <1 |
| Chromium | ppm | ASTM D5185(m) | >10 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >10 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | <1 | 0 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >10 | 0 | 0 | 0 |
| Lead | ppm | ASTM D5185(m) | >10 | <1 | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >75 | 6 | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >10 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| White Metal | scalar | Visual* | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | NONE | NONE | NONE |

CONTAMINATION

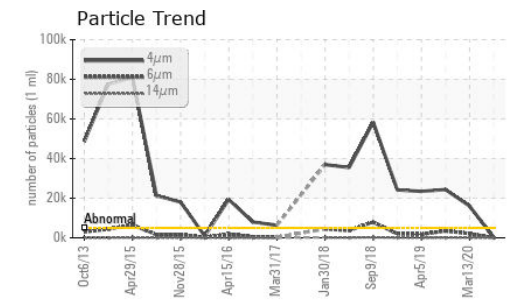
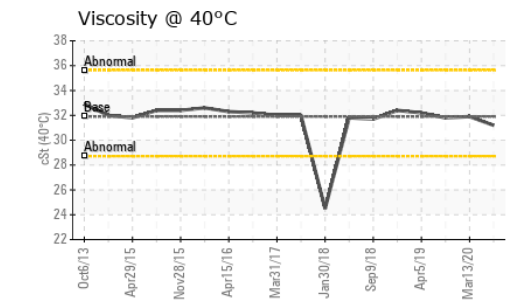
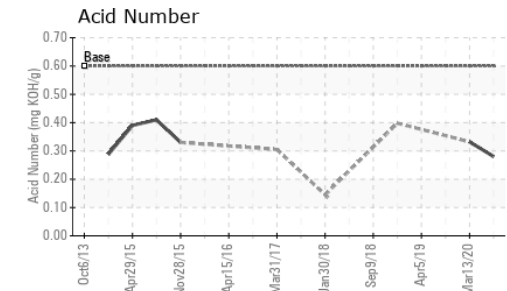
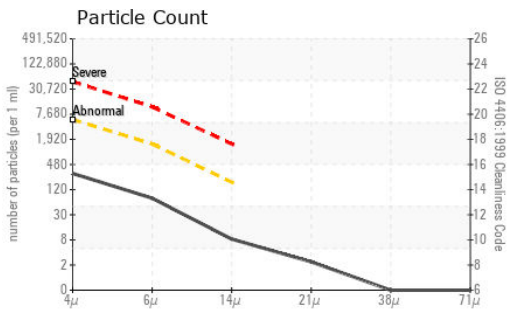
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

| | | | | | | |
|------------------|--------|---------------|-----------|-----------------|------------|------------|
| Silicon | ppm | ASTM D5185(m) | >20 | 0 | <1 | 0 |
| Potassium | ppm | ASTM D5185(m) | >20 | 0 | <1 | <1 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Particles >4µm | | ASTM D7647 | >5000 | 259 | ▲ 16038 | ▲ 24363 |
| Particles >6µm | | ASTM D7647 | >1300 | 66 | ● 2131 | ▲ 3461 |
| Particles >14µm | | ASTM D7647 | >160 | 7 | 45 | 75 |
| Particles >21µm | | ASTM D7647 | >40 | 2 | 8 | 16 |
| Particles >38µm | | ASTM D7647 | >10 | 0 | 0 | 0 |
| Particles >71µm | | ASTM D7647 | >3 | 0 | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | 15/13/10 | ▲ 21/18/13 | ▲ 22/19/13 |
| 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 | NORML | NORML |
| Odor | scalar | Visual* | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.1 | NEG | NEG | NEG |

FLUID CONDITION

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

| | | | | | | |
|------------------|----------|---------------|------|--------------|-------|------|
| Sodium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Boron | ppm | ASTM D5185(m) | 0 | 0 | 0 | 0 |
| 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 | <1 | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) | 50 | 49 | 55 | 55 |
| Phosphorus | ppm | ASTM D5185(m) | 330 | 320 | 338 | 341 |
| Zinc | ppm | ASTM D5185(m) | 430 | 402 | 419 | 424 |
| Sulfur | ppm | ASTM D5185(m) | 760 | 689 | 787 | 776 |
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.60 | 0.28 | 0.332 | --- |
| Visc @ 40°C | cSt | ASTM D7279(m) | 31.9 | 31.2 | 31.9 | 31.8 |



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

Sample No. : WC0751408

Lab Number : 02593211

Unique Number : 5670290

Test Package : MAR 2

Received : 01 Nov 2023

Tested : 01 Nov 2023

Diagnosed : 01 Nov 2023 - Wes Davis

Canadian Coast Guard

CCGS Amundsen, 101 Boul. Champlain

Quebec, QC

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Contact: Chief Engineer

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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.

