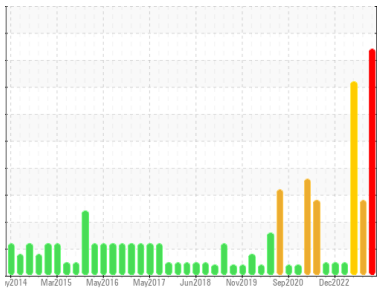
# PROBLEM SUMMARY

Sample Rating Trend

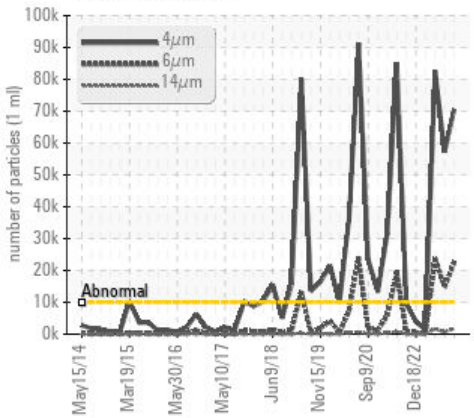


ISO

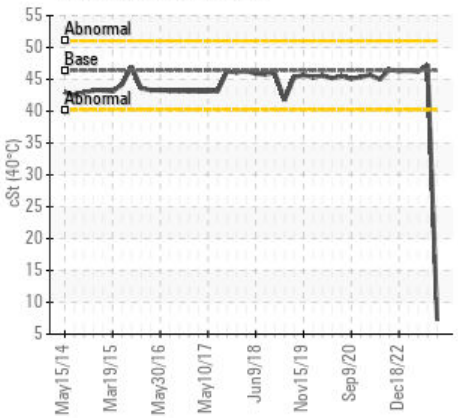
Area
## 2 Phoenix/003 Flare Gas/C Compressor/102 Flare Gas
Machine Id
## N/A 03C102 SCREW
Component
**Screw Compressor**
Fluid
**PETRO CANADA HYDREX AW 46 (2000 LTR)**

## COMPONENT CONDITION SUMMARY

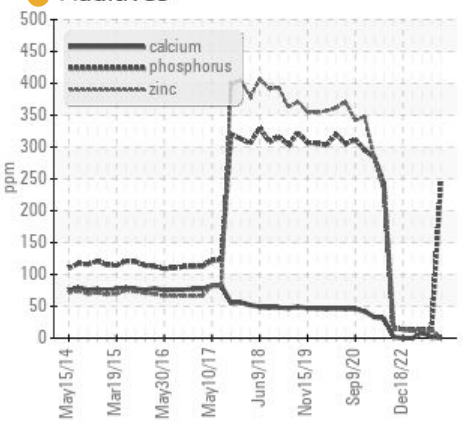
Particle Trend




Viscosity @ 40°C




Additives




## RECOMMENDATION

Due to this condition we recommend the following action... We advise an early resample to confirm this situation. NOTE: The current sample results do not match this units historical trend, indicating the sample may not be from this component/unit. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **SEVERE** | ABNORMAL | SEVERE |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >10000 | ▲ **70568** | ▲ 57192 | ▲ 82565 |
| Particles >6µm | | ASTM D7647 | >2500 | ▲ **22498** | ▲ 14748 | ▲ 23753 |
| Particles >14µm | | ASTM D7647 | >320 | ▲ **1764** | ▲ 653 | ▲ 1630 |
| Particles >21µm | | ASTM D7647 | >80 | ▲ **479** | ▲ 228 | ▲ 426 |
| Particles >38µm | | ASTM D7647 | >20 | ▲ **41** | ▲ 44 | 12 |
| Oil Cleanliness | | ISO 4406 (c) | >20/18/15 | ▲ **23/22/18** | ▲ 23/21/17 | ▲ 24/22/18 |
| Appearance | scalar | Visual* | NORML | ▲ **WGOIL** | NORML | ▲ WGOIL |
| Free Water | scalar | Visual* | | ▲ **1%** | NEG | ▲ 1% |
| Visc @ 40°C | cSt | ASTM D7279(m) | 46.4 | ▲ **7.2** | 47.3 | 46.2 |

**Customer Id:** PETMIS
**Sample No.:** WC0957451
**Lab Number:** 02646723
**Test Package:** IND 2

*To manage this report scan the QR code*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## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Resample | --- | --- | ? | We advise an early resample to confirm this situation. |
| Contact Required | --- | --- | ? | Please contact your representative for information regarding the proper sampling kits for your service. |
| Alert | --- | --- | ? | NOTE: The current sample results do not match this units historical trend, indicating the sample may not be from this component/unit. NOTE: We recommend using IND 3 test kits, |

## HISTORICAL DIAGNOSIS

ISO

**30 Oct 2023 Diag: Kevin Marson**

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The water content is negligible. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

ISO

**27 Jul 2023 Diag: Kevin Marson**

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. We suspect that the abnormal contaminant(s) is the result of incorrect sampling technique. DISCLAIMER: Interpretation of results is based on the sample as received from the customer. The condition of the sample and the method of sampling cannot be verified.All component wear rates are normal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. Free water present. Moderate concentration of visible dirt/debris present in the oil. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

NORMAL

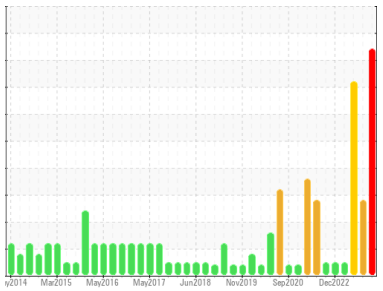
**19 Feb 2023 Diag: Kevin Marson**

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as PETRO CANADA HYDREX AW 46, however, a fluid match indicates that this fluid is ISO 46 Refrigeration Compressor Oil. Please confirm the oil type and grade on your next sample.All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
## 2 Phoenix/003 Flare Gas/C Compressor/102 Flare Gas
Machine Id
## N/A 03C102 SCREW
Component
**Screw Compressor**
Fluid
**PETRO CANADA HYDREX AW 46 (2000 LTR)**

## DIAGNOSIS

**Recommendation**

Due to this condition we recommend the following action... We advise an early resample to confirm this situation. NOTE: The current sample results do not match this units historical trend, indicating the sample may not be from this component/unit. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

**Wear**

Component wear rates appear to be normal (unconfirmed).

**Contamination**

There is a high amount of particulates (2 to 100 microns in size) present in the oil. There is a moderate concentration of water present in the oil. Free water present.

**Fluid Condition**

Viscosity of sample indicates oil is within ISO 7 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0957451** | WC0873659 | WC0841306 |
| Sample Date | | Client Info | | **02 Jul 2024** | 30 Oct 2023 | 27 Jul 2023 |
| 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 | | | | **SEVERE** | ABNORMAL | SEVERE |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | **0** | --- | --- |
| Iron | ppm | ASTM D5185(m) | >60 | **2** | 2 | 1 |
| Chromium | ppm | ASTM D5185(m) | >4 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | | **<1** | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >5 | **0** | 0 | <1 |
| Lead | ppm | ASTM D5185(m) | >10 | **0** | <1 | 0 |
| Copper | ppm | ASTM D5185(m) | >30 | **0** | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >15 | **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 |

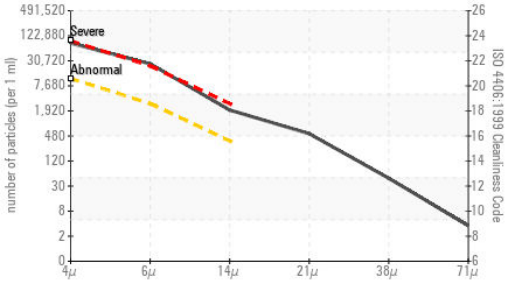
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 0 | **0** | <1 | 0 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | <1 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 0 | **<1** | 0 | <1 |
| Calcium | ppm | ASTM D5185(m) | 50 | **<1** | 2 | 8 |
| Phosphorus | ppm | ASTM D5185(m) | 330 | **249** | 12 | 13 |
| Zinc | ppm | ASTM D5185(m) | 430 | **1** | 12 | 13 |
| Sulfur | ppm | ASTM D5185(m) | 760 | **16** | 682 | 611 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >50 | **4** | <1 | 1 |
| Sodium | ppm | ASTM D5185(m) | | **0** | <1 | 0 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | 0 | <1 |
| Water | % | ASTM D6304* | >0.1 | **0.010** | 0.00 | 0.003 |
| ppm Water | ppm | ASTM D6304* | >1000 | **105** | 0.00 | 39.3 |

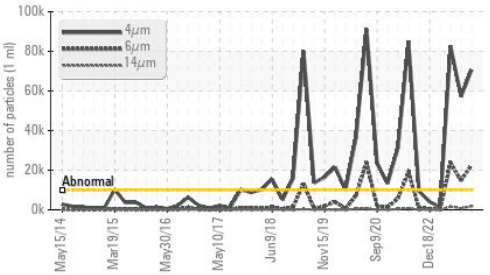
| FLUID CLEANLINESS | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Particles >4µm | ASTM D7647 | >10000 | **70568** | 57192 | 82565 |
| Particles >6µm | ASTM D7647 | >2500 | **22498** | 14748 | 23753 |
| Particles >14µm | ASTM D7647 | >320 | **1764** | 653 | 1630 |
| Particles >21µm | ASTM D7647 | >80 | **479** | 228 | 426 |
| Particles >38µm | ASTM D7647 | >20 | **41** | 44 | 12 |
| Particles >71µm | ASTM D7647 | >4 | **3** | 9 | 0 |
| Oil Cleanliness | ISO 4406 (c) | >20/18/15 | **23/22/18** | 23/21/17 | 24/22/18 |

# OIL ANALYSIS REPORT

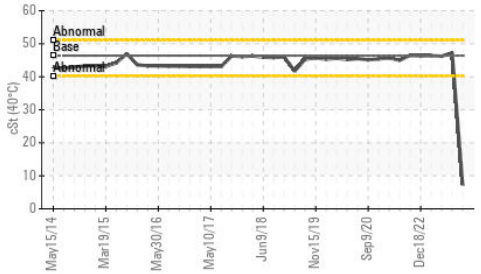
Particle Count



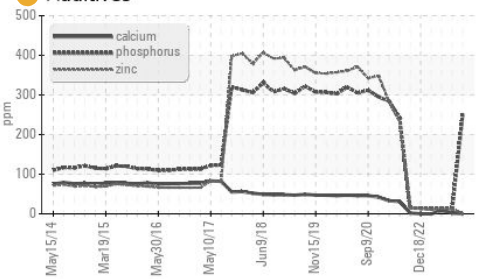

Particle Trend



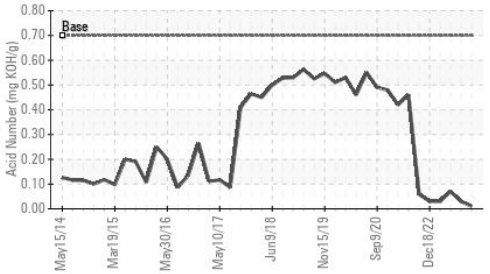

Viscosity @ 40°C




Additives



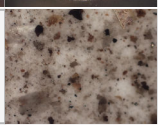

Acid Number




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.70 | **0.01** | 0.03 | 0.07 |

| 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 | ▲ LTMOD |
| Sand/Dirt | scalar | Visual* | NONE | **NONE** | NONE | VLITE |
| Appearance | scalar | Visual* | NORML | ▲ **WGOIL** | NORML | ▲ WGOIL |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.1 | **.2%** | .2% | .2% |
| Free Water | scalar | Visual* | | ▲ **1%** | NEG | ▲ 1% |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 46.4 | ▲ **7.2** | 47.3 | 46.2 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |
| PrtFilter | | | *no image* | *no image* |  |

ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0957451 **Received** : 09 Jul 2024
**Lab Number** : 02646723 **Tested** : 15 Jul 2024
**Unique Number** : 5812275 **Diagnosed** : 15 Jul 2024 - Kevin Marson
**Test Package** : IND 2 ( Additional Tests: KF, PQ )

*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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