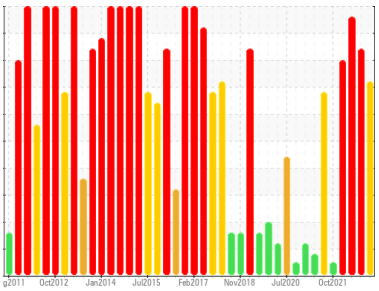
# PROBLEM SUMMARY

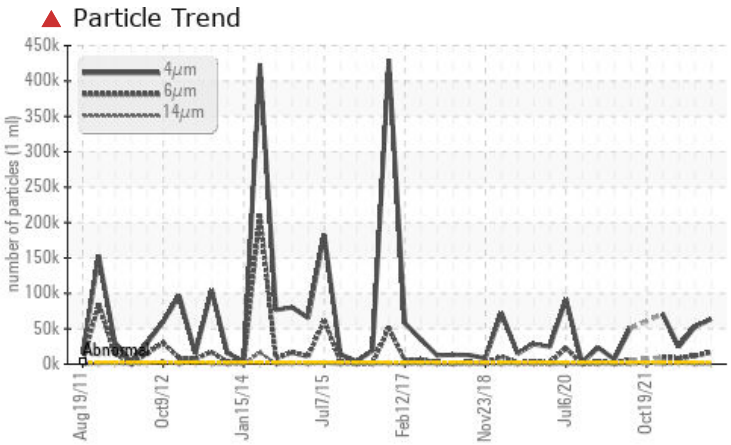
Area
**5 Utilities/030 Boiler House/B Blower/Fan/713 #13 FD East**
Machine Id
**N/A 30TB713**
Component
**Turbine**
Fluid
**PETRO CANADA TURBOFLO 68 (20 LTR)**

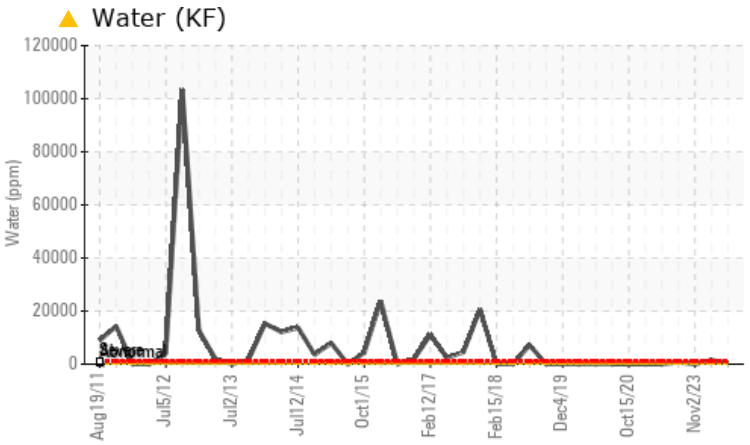
**Sample Rating Trend**



**ISO**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

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. 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.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **SEVERE** | SEVERE | SEVERE |
| Water | % | ASTM D6304* | >0.03 | **0.054** | 0.147 | 0.003 |
| ppm Water | ppm | ASTM D6304* | >300 | **543** | 1475 | 28.4 |
| Particles >4µm | | ASTM D7647 | >2500 | **63702** | 52536 | 24425 |
| Particles >6µm | | ASTM D7647 | >640 | **16503** | 11620 | 8264 |
| Particles >14µm | | ASTM D7647 | >80 | **614** | 194 | 985 |
| Particles >21µm | | ASTM D7647 | >20 | **96** | 30 | 304 |
| Oil Cleanliness | | ISO 4406 (c) | >18/16/13 | **23/21/16** | 23/21/15 | 22/20/17 |
| Debris | scalar | Visual* | NONE | **LIGHT** | NONE | NONE |
| Appearance | scalar | Visual* | NORML | **HAZY** | HAZY | WGOIL |
| Emulsified Water | scalar | Visual* | >0.03 | **.2%** | .5% | .2% |

**Customer Id:** PETMIS
**Sample No.:** WC0925273
**Lab Number:** 02626054
**Test Package:** IND 2

*To manage this report scan the QR code*

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## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Filter | --- | --- | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |
| Resample | --- | --- | ? | Resample in 30-45 days to monitor this situation. |
| Alert | --- | --- | ? | 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. |
| Check Breathers | --- | --- | ? | 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. |
| Check Dirt Access | --- | --- | ? | We advise that you check all areas where contaminants can enter the system. |
| Check Seals | --- | --- | ? | Check seals and/or filters for points of contaminant entry. |
| Filter Fluid | --- | --- | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |

## HISTORICAL DIAGNOSIS

**WATER**

**05 Jan 2024 Diag: Bill Quesnel**

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We advise that you follow the water drain-off procedure for this component. 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 recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. There is a high concentration of water present in the 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**

**02 Nov 2023 Diag: Kevin Marson**

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation.Copper ppm levels are abnormal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. The water content is negligible. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

view report

**ISO**

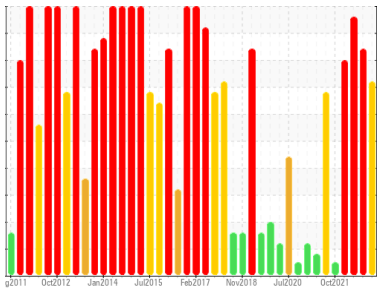
**07 Sep 2022 Diag: Kevin Marson**

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. 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 follow the water drain-off procedure for this component. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.All component wear rates are normal. Particles >6µm are severely high. Oil Cleanliness are severely high. Particles >4µm are severely high. Particles >4µm are severely high.. ppm Water and water, water and water contamination levels are abnormal. Particles >14µm are notably high. There is a moderate concentration of water present in the oil. Free water present. 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

# OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
**5 Utilities/030 Boiler House/B Blower/Fan/713 #13 FD East**
Machine Id
**N/A 30TB713**
Component
**Turbine**
Fluid
**PETRO CANADA TURBOFLO 68 (20 LTR)**

## DIAGNOSIS

**Recommendation**

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. 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.

**Wear**

All component wear rates are normal.

**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. Light concentration of visible dirt/debris present in the oil.

**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 | | **WC0925273** | WC0894084 | WC0831865 |
| Sample Date | | Client Info | | **01 Apr 2024** | 05 Jan 2024 | 02 Nov 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** | SEVERE | SEVERE |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >15 | **6** | 1 | 3 |
| Chromium | ppm | ASTM D5185(m) | >4 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >10 | **0** | <1 | 0 |
| Lead | ppm | ASTM D5185(m) | | **0** | 0 | 1 |
| Copper | ppm | ASTM D5185(m) | >5 | **<1** | <1 | ▲ 9 |
| Tin | ppm | ASTM D5185(m) | >5 | **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 |

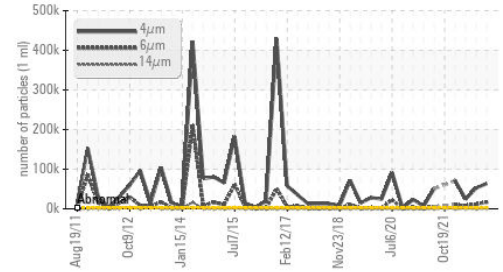
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 0 | **0** | 0 | <1 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 0 | **<1** | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) | 0 | **0** | 2 | <1 |
| Phosphorus | ppm | ASTM D5185(m) | 120 | **<1** | <1 | 2 |
| Zinc | ppm | ASTM D5185(m) | 0.0 | **<1** | <1 | 5 |
| Sulfur | ppm | ASTM D5185(m) | 50 | **556** | 626 | 753 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >15 | **0** | 0 | 0 |
| Sodium | ppm | ASTM D5185(m) | | **4** | 7 | 2 |
| Potassium | ppm | ASTM D5185(m) | >20 | **<1** | <1 | 0 |
| Water | % | ASTM D6304* | >0.03 | ▲ **0.054** | ▲ 0.147 | 0.003 |
| ppm Water | ppm | ASTM D6304* | >300 | ▲ **543** | ▲ 1475 | 28.4 |

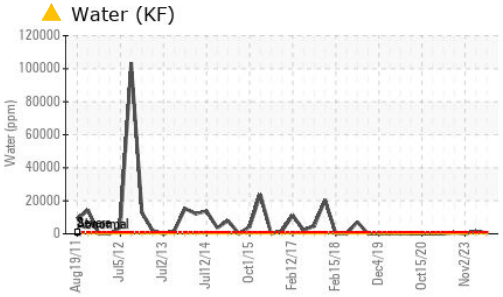
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >2500 | ▲ **63702** | ▲ 52536 | ▲ 24425 |
| Particles >6µm | | ASTM D7647 | >640 | ▲ **16503** | ▲ 11620 | ▲ 8264 |
| Particles >14µm | | ASTM D7647 | >80 | ▲ **614** | ▲ 194 | ▲ 985 |
| Particles >21µm | | ASTM D7647 | >20 | ▲ **96** | ● 30 | ▲ 304 |
| Particles >38µm | | ASTM D7647 | >4 | **3** | 2 | ▲ 26 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 2 |
| Oil Cleanliness | | ISO 4406 (c) | >18/16/13 | ▲ **23/21/16** | ▲ 23/21/15 | ▲ 22/20/17 |

# OIL ANALYSIS REPORT

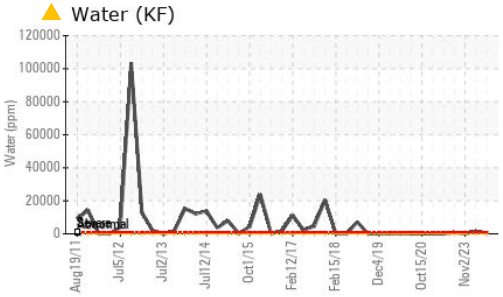
Particle Trend



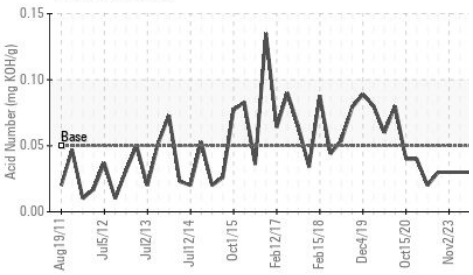

Water (KF)



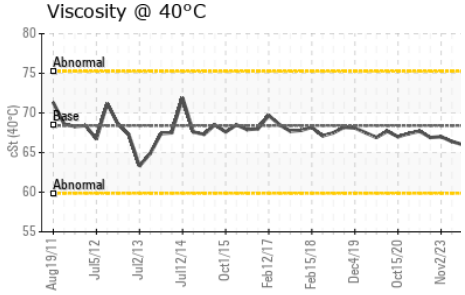

Water (KF)




Acid Number




Viscosity @ 40°C

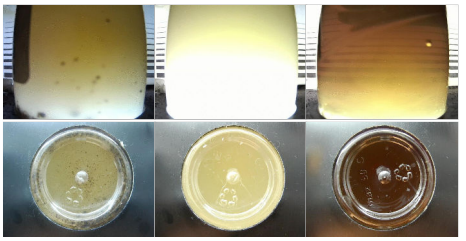



| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.05 | **0.03** | 0.03 | 0.03 |

| 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 | ▲ **LIGHT** | NONE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | **VLITE** | NONE | NONE |
| Appearance | scalar | Visual* | NORML | ▲ **HAZY** | ▲ HAZY | ▲ WGOIL |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.03 | ▲ **.2%** | ▲ .5% | .2% |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

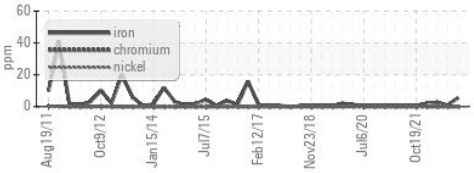
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 68.4 | **66.0** | 66.4 | 67.0 |

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

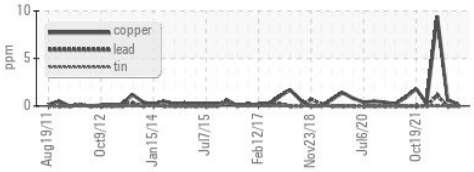


## GRAPHS

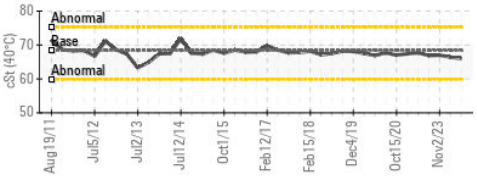
Ferrous Alloys



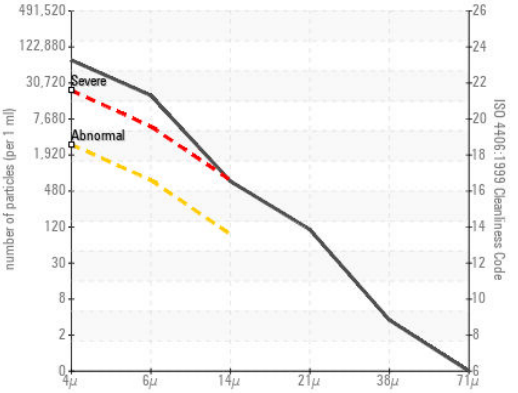

Non-ferrous Metals



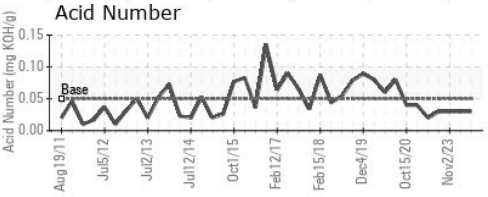

Viscosity @ 40°C




Particle Count




Acid Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0925273 **Received** : 02 Apr 2024
**Lab Number** : 02626054 **Tested** : 03 Apr 2024
**Unique Number** : 5759186 **Diagnosed** : 03 Apr 2024 - Kevin Marson
**Test Package** : IND 2 ( Additional Tests: KF, TAN Man )

*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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