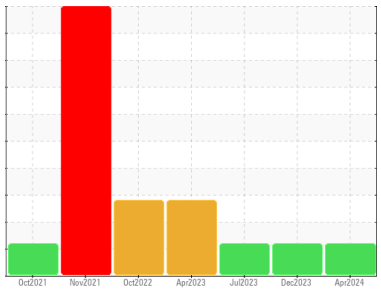
# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Area
**BAGLINE**
Machine Id
**KETTLE 2 - 11531818**
Component
**Refrigeration Compressor**
Fluid
**PETRO CANADA PURITY FG EP GEAR OIL 220 (1 GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

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

**Contamination**
Insufficient sample was received to conduct all the routine laboratory tests. There is a high amount of silt (particulates < 14 microns in size) present in the oil.

**Fluid Condition**
The condition of the oil is acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **USP0006695** | USP0004463 | USP250214 |
| Sample Date | | Client Info | | **25 Apr 2024** | 17 Dec 2023 | 05 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 | | | | **ABNORMAL** | ABNORMAL | ABNORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >8 | **0** | <1 | 2 |
| Chromium | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Lead | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >8 | **17** | 14 | 17 |
| Tin | ppm | ASTM D5185m | >4 | **1** | <1 | 2 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **4** | 2 | 2 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185m | | **0** | 0 | 2 |
| Calcium | ppm | ASTM D5185m | | **0** | 0 | 11 |
| Phosphorus | ppm | ASTM D5185m | | **548** | 566 | 596 |
| Zinc | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Sulfur | ppm | ASTM D5185m | | **531** | 461 | 706 |

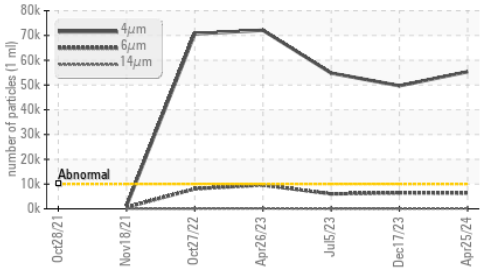
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >15 | **6** | 8 | 6 |
| Sodium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 0 | 1 |
| Water | % | ASTM D6304 | >0.01 | **0.003** | 0.002 | 0.004 |
| ppm Water | ppm | ASTM D6304 | >100 | **33** | 24 | 41.6 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >10000 | ▲ **55352** | ▲ 49672 | ▲ 54805 |
| Particles >6µm | | ASTM D7647 | >2500 | ▲ **6362** | ▲ 6433 | ▲ 6017 |
| Particles >14µm | | ASTM D7647 | >640 | **151** | 52 | 49 |
| Particles >21µm | | ASTM D7647 | >160 | **31** | 12 | 10 |
| Particles >38µm | | ASTM D7647 | >40 | **1** | 1 | 2 |
| Particles >71µm | | ASTM D7647 | >10 | **0** | 1 | 1 |
| Oil Cleanliness | | ISO 4406 (c) | >20/18/16 | ▲ **23/20/14** | ▲ 23/20/13 | ▲ 23/20/13 |

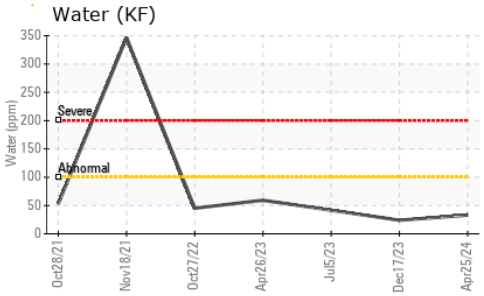
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974 | 0.51 | **---** | 0.55 | 0.59 |

# OIL ANALYSIS REPORT

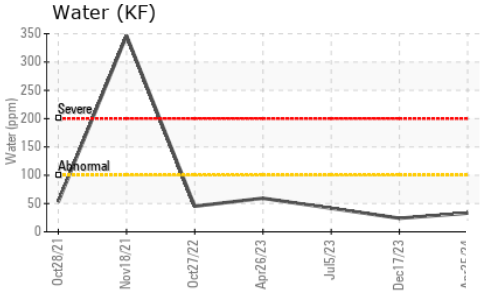
Particle Trend



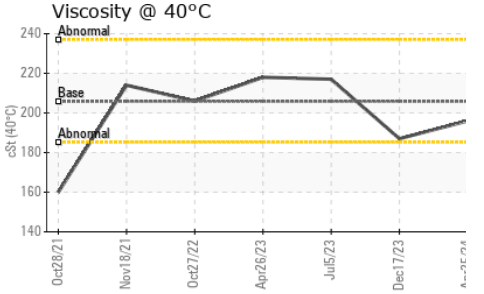

Water (KF)



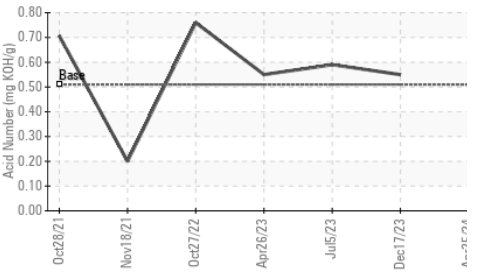

Water (KF)




Viscosity @ 40°C




Acid Number



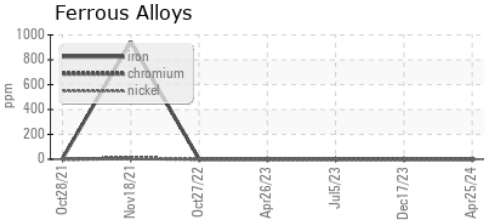

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | 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 | >0.01 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 205.8 | **196** | 187 | 217 |

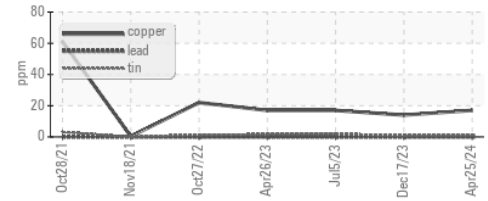
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |

## GRAPHS

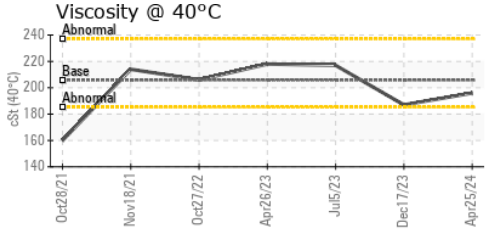
Ferrous Alloys



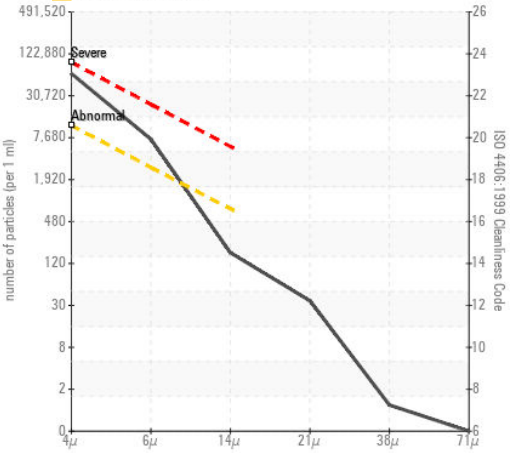

Non-ferrous Metals



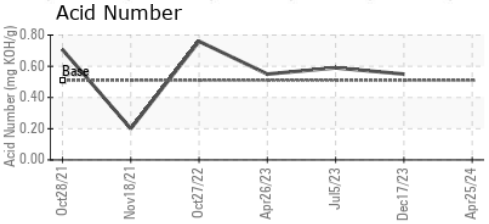

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : USP0006695
**Lab Number** : 06161493
**Unique Number** : 10996916
**Test Package** : IND 2

**Received** : 26 Apr 2024
**Tested** : 30 Apr 2024
**Diagnosed** : 30 Apr 2024 - Jonathan Hester

**KraftHeinz - Cedar Rapids - Plant 8370**
4601 C ST SW
CEDAR RAPIDS, IA
US 52404
Contact: Service Manager

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*

T:
F: