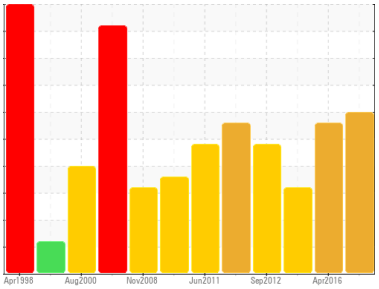
# PROBLEM SUMMARY

**Sample Rating Trend**

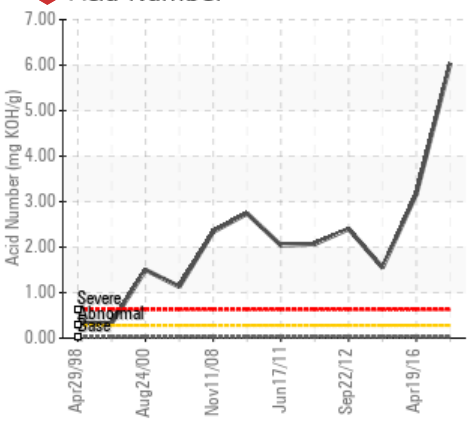



**DEGRADATION**

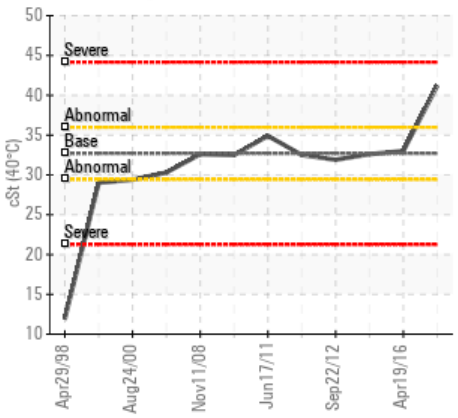
Machine Id
## PARKER BOILERS 1
Component
**Heat Transfer Fluid**
Fluid
**PETRO CANADA CALFLO AF (600 GAL)**

## COMPONENT CONDITION SUMMARY

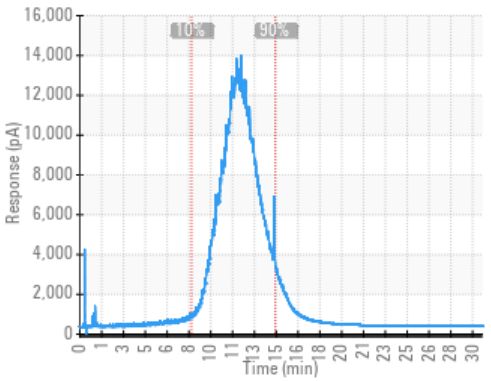
Acid Number




Viscosity @ 40°C




GCD Spectrum




## RECOMMENDATION

AN is severely elevated in conjunction with Pentane insolubles elevated. The GCD 90% distillation point is elevated. This data indicates oxidation and has caused heavy sludge and insolubles in the system. The viscosity has elevated significantly confirming sludge and system fouling.
Take another sample and purge oil before capturing sample to confirm results.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **SEVERE** | SEVERE | SEVERE |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.03 | **6.04** | 3.17 | 1.55 |
| Visc @ 40°C | cSt | ASTM D7279(m) | 32.7 | **41.2** | 33.0 | 32.6 |
| Pentane Insolubles | % | ASTM D893(m)* | | **3.50** | 1.09 | 0.257 |
| (GCD) 90% Distillation Point | °C | ASTM D2887* | 475 | **489.0** | 485.0 | 475.6 |

**Customer Id:** CUSANY
**Sample No.:** WC1234567
**Lab Number:** 01234567
**Test Package:** HTTFL

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Ron LeBlanc +1 (541)678-7044
Ronald.LeBlancSr@HFSinclair.com

*To change component or sample information:*
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

## RECOMMENDED ACTIONS

*There are no recommended actions for this sample.*

## HISTORICAL DIAGNOSIS

**19 Apr 2016 Diag: Steven Slanker**

**DEGRADATION**

Acid number and pentane insoluble are very high. Recommend drain, flush and recharge system with fresh Calflo AF. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. COC Flash Point is marginally low.

**view report**

**12 Oct 2013 Diag: Gaston Arseneault**

**DEGRADATION**

Even though it appears the acid level (Acid Number) dropped a bit, it is still very high and exceeds condemning limits. Therefore we can expect it to rise even further. If an oil change was done then it appears a fair amount of the previously acidic oil was left in the system, or the fluid still sees contamination from an acidic material. if a system cleaningm, flushing and refill has not taken place since the last sample we recommend to plan for it so the fluid can look healthy again. Acid Number (AN) is severely high.

**view report**

**22 Sep 2012 Diag: Gaston Arseneault**

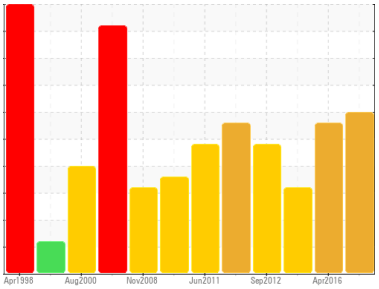
**DEGRADATION**

The TAN is still rising and is now well beyond condemning limits. The insoluble solids are also exceeding severe warning limits. We have been advising for years to change this fluid and we say it again. The fluid needs to be replaced and the system thoroughly cleaned before production related issues start to appear if it hasn't started already.

**view report**

# OIL ANALYSIS REPORT

Sample Rating Trend




**DEGRADATION**

Machine Id
## PARKER BOILERS 1
Component
**Heat Transfer Fluid**
Fluid
**PETRO CANADA CALFLO AF (600 GAL)**

## DIAGNOSIS

**Recommendation**

AN is severely elevated in conjunction with Pentane insolubles elevated. The GCD 90% distillation point is elevated. This data indicates oxidation and has caused heavy sludge and insolubles in the system. The viscosity has elevated significantly confirming sludge and system fouling.
Take another sample and purge oil before capturing sample to confirm results.

**Contamination**

Pentane Insolubles levels are severely high.

**Fluid Condition**

Acid Number (AN) is severely high. Visc @ 40°C is abnormally high. (GCD) 90% Distillation Point is marginally high.

| SAMPLE INFORMATION | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC** | PC | PC |
| Sample Date | | Client Info | | **13 Oct 2022** | 19 Apr 2016 | 12 Oct 2013 |
| Machine Age | days | Client Info | | **0** | 0 | 0 |
| Oil Age | days | Client Info | | **3** | 4 | 1 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **SEVERE** | SEVERE | SEVERE |

| WEAR METALS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >200 | **93** | 63 | 82 |
| Chromium | ppm | ASTM D5185(m) | >21 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >21 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | >21 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >21 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >21 | **<1** | 0 | <1 |
| Lead | ppm | ASTM D5185(m) | >21 | **<1** | <1 | <1 |
| Copper | ppm | ASTM D5185(m) | >21 | **<1** | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >21 | **0** | <1 | <1 |
| Antimony | ppm | ASTM D5185(m) | >21 | **<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 |

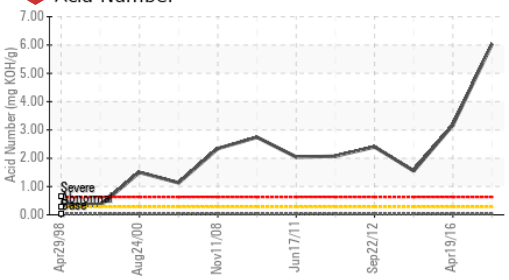
| ADDITIVES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 0 | **<1** | <1 | <1 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 0 | **1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Calcium | ppm | ASTM D5185(m) | 0 | **<1** | <1 | 4 |
| Phosphorus | ppm | ASTM D5185(m) | 270 | **267** | 238 | 226 |
| Zinc | ppm | ASTM D5185(m) | 0 | **3** | 2 | 3 |
| Sulfur | ppm | ASTM D5185(m) | 10 | **21** | 43 | 52 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **1** | <1 | 2 |
| Sodium | ppm | ASTM D5185(m) | >21 | **<1** | <1 | <1 |
| Potassium | ppm | ASTM D5185(m) | >20 | **<1** | 0 | 0 |
| Water | % | ASTM D6304* | >0.0601 | **0.026** | 0.012 | 0.004 |
| ppm Water | ppm | ASTM D6304* | >601 | **260.5** | 126.7 | 41.7 |

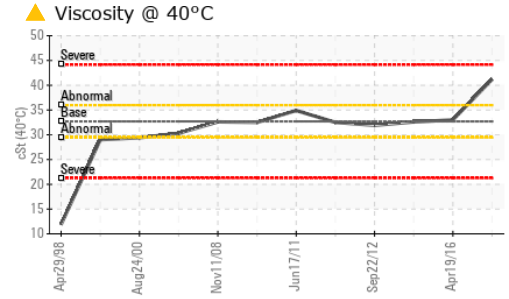
| FLUID DEGRADATION | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.03 | **6.04** | 3.17 | 1.55 |

# OIL ANALYSIS REPORT

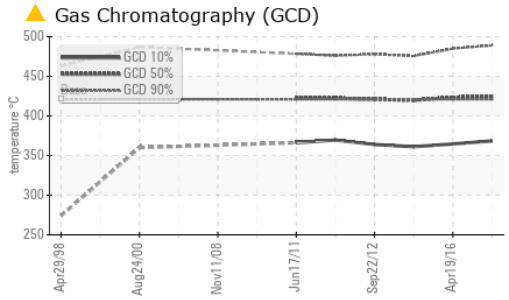
Acid Number



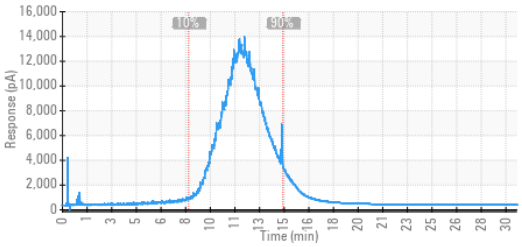

Viscosity @ 40°C



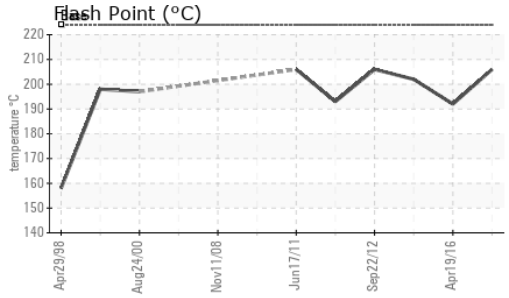

Gas Chromatography (GCD)




GCD Spectrum




Flash Point (°C)

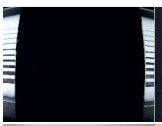



| VISUAL | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | VLITE | NONE |
| Yellow Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Silt | scalar | Visual* | NONE | **NONE** | NONE | VLITE |
| Debris | scalar | Visual* | NONE | **NONE** | VLITE | VLITE |
| 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* | >0.0601 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 32.7 | ▲ **41.2** | 33.0 | 32.6 |
| COC Flash Point | °C | ASTM D92* | 224 | **206** | ▲ 192 | 202 |

| SEDIMENT | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Pentane Insolubles | % | ASTM D893(m)* | | ⬢ **3.50** | ⬢ 1.09 | 0.257 |

| SIMULATED DISTILLATON (GCD) | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| (GCD) % < 335°C | °C | ASTM D2887* | 2.5 | **2.86** | 3.00 | 3.57 |
| (GCD) Initial Boiling Point | °C | ASTM D2887* | | **190.3** | 243.0 | 187.0 |
| (GCD) 5% Distillation Point | °C | ASTM D2887* | | **349.7** | 345.5 | 341.4 |
| (GCD) 10% Distillation Point | °C | ASTM D2887* | 367 | **368.4** | 364.7 | 361.2 |
| (GCD) 20% Distillation Point | °C | ASTM D2887* | | **389.0** | 386.1 | 382.5 |
| (GCD) 30% Distillation Point | °C | ASTM D2887* | | **403.1** | 400.6 | 397.2 |
| (GCD) 40% Distillation Point | °C | ASTM D2887* | | **414.4** | 412.4 | 409.0 |
| (GCD) 50% Distillation Point | °C | ASTM D2887* | 421 | **424.9** | 423.3 | 419.8 |
| (GCD) 60% Distillation Point | °C | ASTM D2887* | | **435.7** | 434.5 | 430.7 |
| (GCD) 70% Distillation Point | °C | ASTM D2887* | | **448.2** | 446.8 | 442.6 |
| (GCD) 80% Distillation Point | °C | ASTM D2887* | | **464.1** | 461.8 | 456.3 |
| (GCD) 90% Distillation Point | °C | ASTM D2887* | 475 | ▲ **489.0** | 485.0 | 475.6 |
| (GCD) FBP% Distillation Point | °C | ASTM D2887* | | **556.2** | 593.9 | 531.2 |

| SAMPLE IMAGES | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|
| Color | | |  |  |  |
| Bottom | | |  |  |  |

ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC1234567 **Received** : 24 Oct 2022
**Lab Number** : 01234567 **Diagnosed** : 16 Nov 2022
**Unique Number** : 12345678 **Diagnostician** : Ron LeBlanc
**Test Package** : HTTFL ( Additional Tests: GC-PercFuel, Spat, 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.*


**Cusany Logistics Inc.**
1212 Industrial Place
Centerville, OH
USA 75900
Contact: Jim Leduc
jim.leduc@cusanylogisticsinc.com
T: (305)555-1212
F: (305)555-1222