

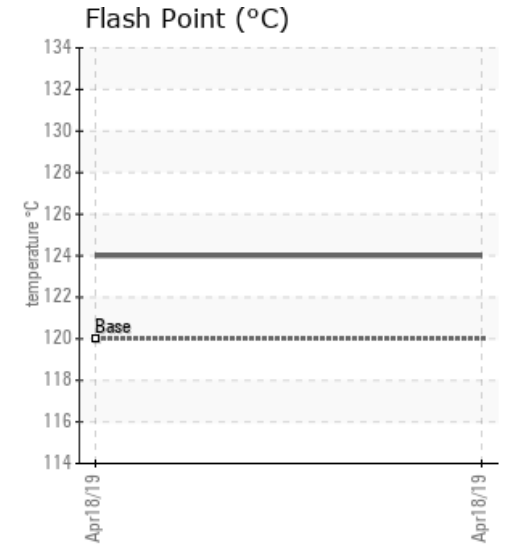
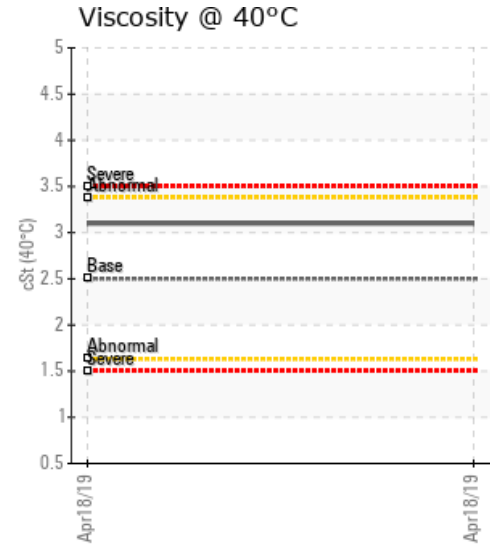
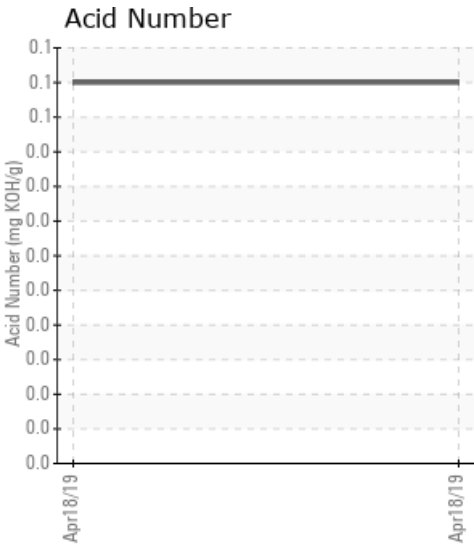
## [10-05-46-6W5] HOT OIL SYSTEM

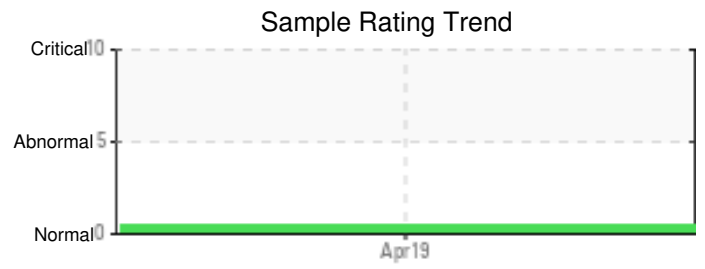
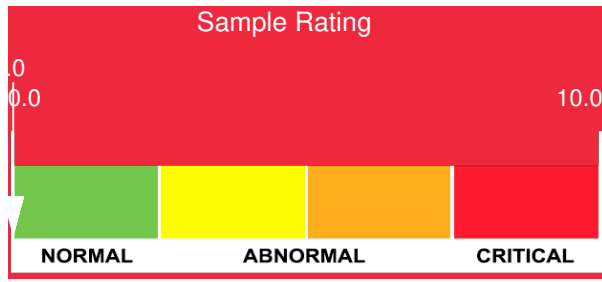
| Customer: PTRHTF20174   | System Information   | Sample Information   |
|---|--|--|
| Quadra Chemicals<br>700 4th Ave S.W Suite 470<br>Calgary, AB T2P 3J4 Canada<br>Attn: Quadra Samples<br>Tel:<br>E-Mail: quadra_samples@quadra.ca | System Volume: 31500 ltr<br>Bulk Operating Temp: 572F / 300C<br>Heating Source:<br>Blanket:<br>Fluid: DOW CHEMICAL DOWTHERM Q<br>Make: | Lab No: 02286539<br>Analyst: Terry Veenstra<br>Sample Date: 04/18/19<br>Received Date: 05/22/19<br>Completed: 05/27/19 |

Recommendation: Keyera Buck Lake. Fluid is in good condition relative to new oil condition. Good for continued use.

Comments:

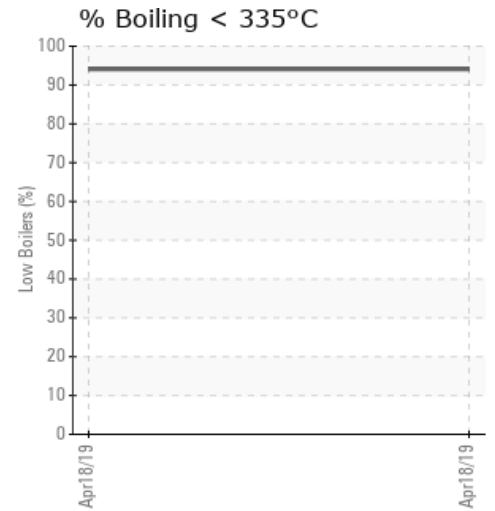
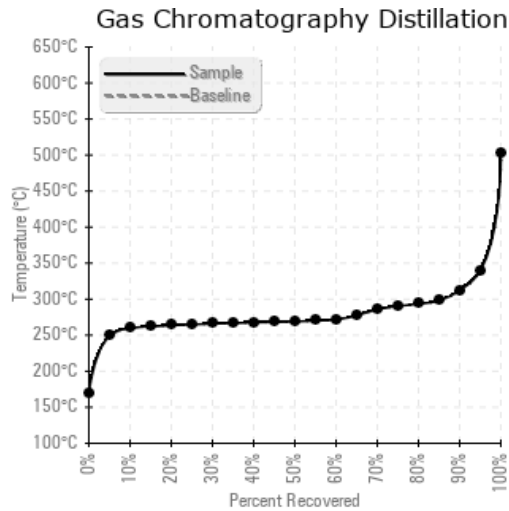
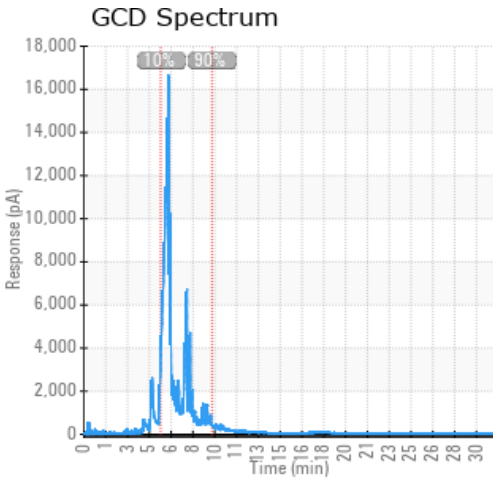
| Sample Date   | Received Date | Fluid Age | Sample Location | Flash Point (COC) | Water (KF) | Viscosity (40°C) | Acid Number | Solids | GCD 10%   | GCD 50%   | GCD 90%   | GCD % < 335°C |
|---------------|---------------|-----------|-----------------|-------------------|------------|------------------|-------------|--------|-----------|-----------|-----------|---------------|
|               | mm/dd/yy      |           |                 | °F/°C             | ppm        | cSt              | mg/KOH/g    | %wt    | °F/°C     | °F/°C     | °F/°C     | %             |
| 04/18/19      | 05/22/19      | 18y       | EXCHANGER       | 255 / 124         | 85.3       | 3.1              | 0.055       | 0.040  | 500 / 260 | 516 / 269 | 594 / 312 | 94.09         |
| Baseline Data |               |           |                 | 248 / 120         |            | 2.50             |             |        |           |           |           |               |





| Sample Date          | Iron | Chromium | Nickel | Aluminum | Copper | Lead | Tin | Cadmium | Silver | Vanadium | Silicon | Sodium | Potassium | Titanium | Molybdenum | Antimony | Manganese | Lithium | Boron | Magnesium | Calcium | Barium | Phosphorus | Zinc |
|----------------------|------|----------|--------|----------|--------|------|-----|---------|--------|----------|---------|--------|-----------|----------|------------|----------|-----------|---------|-------|-----------|---------|--------|------------|------|
| 04/18/19             | 0    | 0        | 0      | 0        | 0      | 0    | 0   | 0       | 0      | 0        | 0       | 0      | 2         | 0        | 0          | 0        | 0         | 0       | 0     | 0         | 0       | 0      | 0          | 0    |
| <b>Baseline Data</b> |      |          | 0      | 0        |        |      |     |         |        | 0        |         |        | 0         | 0        |            |          |           |         | 0     |           |         |        | 0          |      |

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



### Historical Comments

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