

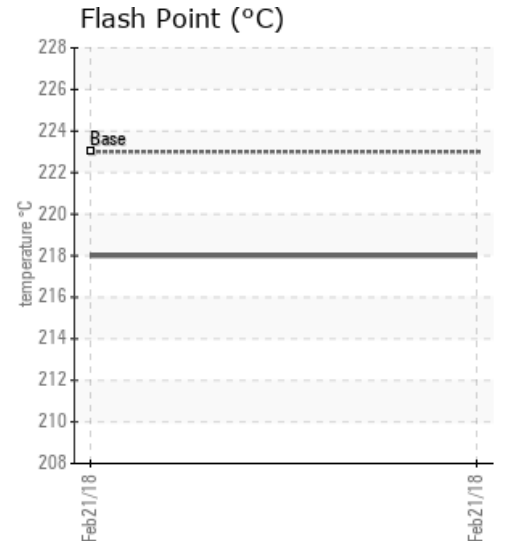
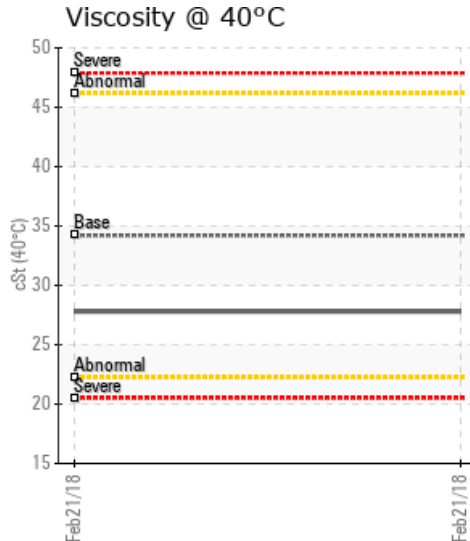
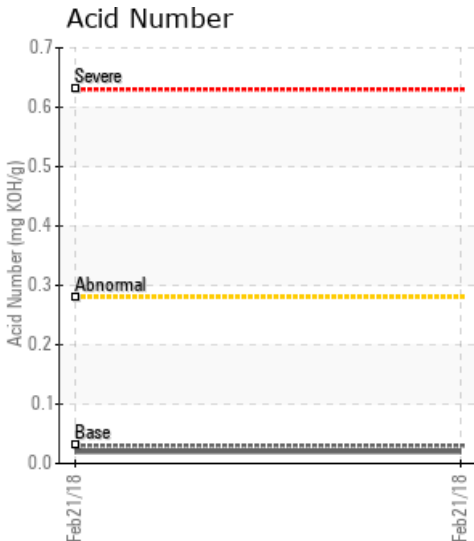
[NUVISTA CLAIRMONT / 08-10-68-08-W6] NUVISTA

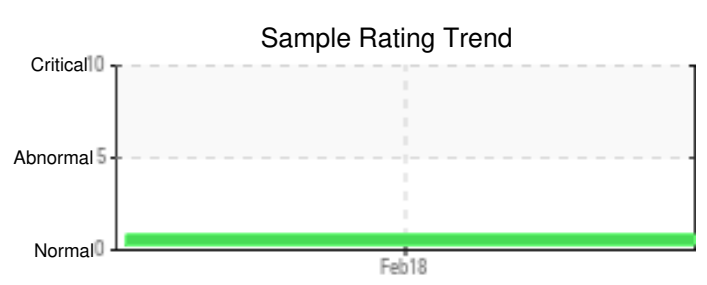
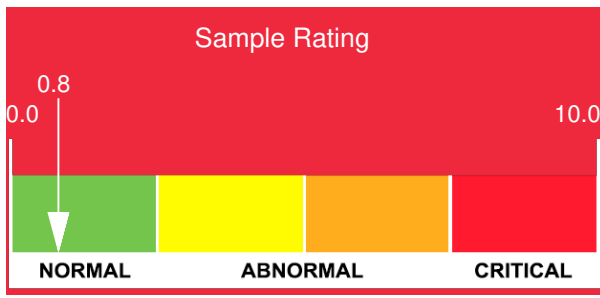
| Customer: PTRHTF20175 | System Information | Sample Information |
|--|--|---|
| QUADRA CHEMICALS 7802 98 STREET CLAIRMONT, AB T0H 0W0 Canada Attn: Daryl Key Tel: (780)296-0137 E-Mail: daryl_key@quadra.ca | System Volume: 2100 gal Bulk Operating Temp: Not Specified Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: | Lab No: 02200898 Analyst: Clinton Buhler Sample Date: 02/21/18 Received Date: 02/27/18 Completed: 03/01/18 To discuss this report contact Clinton Buhler at 780-516-9920 |

Recommendation: Slightly reduced viscosity and flashpoint, along with reduced 90% distillation temperature can indicate thermal degradation (cracking) of the heat transfer fluid. Ensure that system is operating within design parameters and within the design limitations of the heat transfer fluid. Perform venting of the expansion tank to vent off the low boiling vapors. Re-sample fluid in 6-12 months

Comments: (GCD) 90% Distillation Point is marginally low.

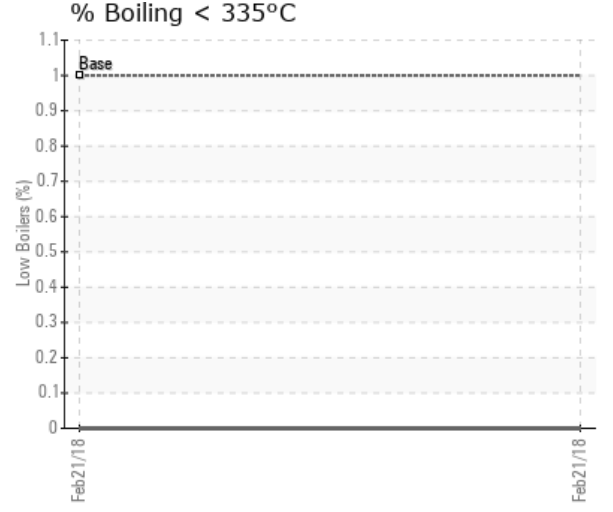
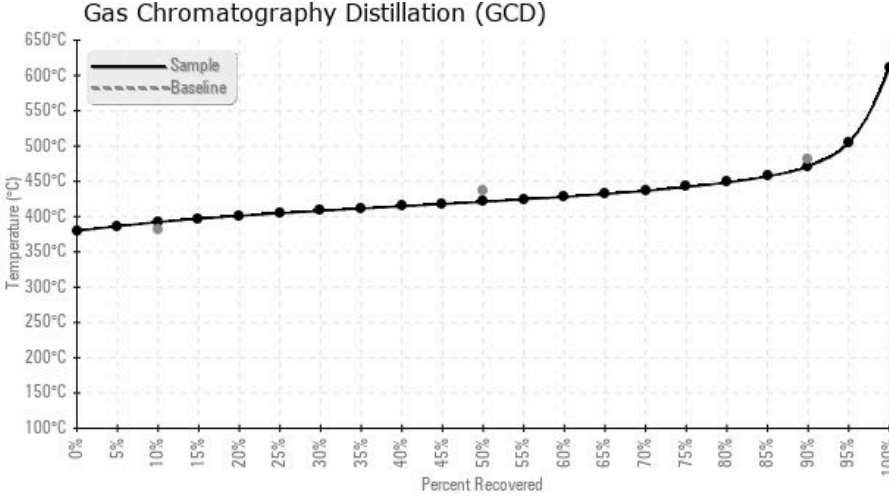
| Sample Date | Received Date | Fluid Age | Sample Location | Flash Point (COC) | Water (KF) | Viscosity (40°C) | Acid Number | Solids | GCD 10% | GCD 50% | GCD 90% | GCD % < 335°C |
|---------------|---------------|-----------|-----------------|-------------------|------------|------------------|-------------|--------|-----------|-----------|-----------|---------------|
| | mm/dd/yy | | | °F/°C | ppm | cSt | mg/KOH/g | %wt | °F/°C | °F/°C | °F/°C | % |
| 02/21/18 | 02/27/18 | 2y | | 424 / 218 | 0.00 | 27.8 | 0.020 | 0.052 | 738 / 392 | 790 / 421 | 880 / 471 | 0.00 |
| Baseline Data | | | | 433 / 223 | | 34.2 | 0.03 | | 720 / 382 | 817 / 436 | 900 / 482 | 1.00 |





| 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 |
|---------------|------|----------|--------|----------|--------|------|-----|---------|--------|----------|---------|--------|-----------|----------|------------|----------|-----------|---------|-------|-----------|---------|--------|------------|------|
| 02/21/18 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Baseline Data | | | 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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