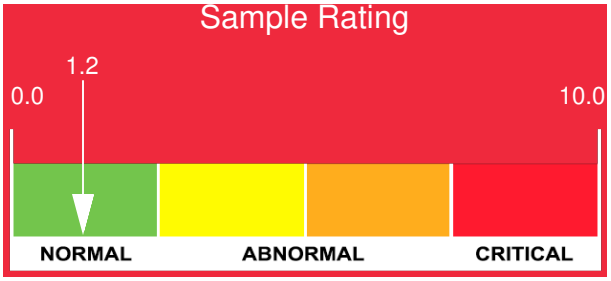
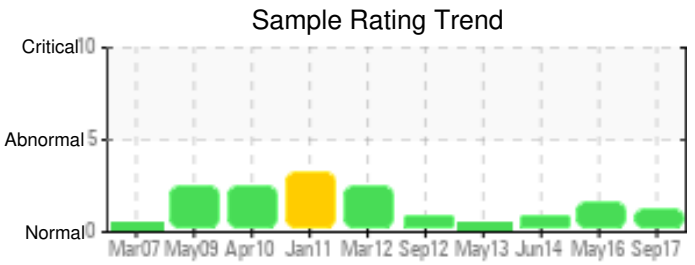


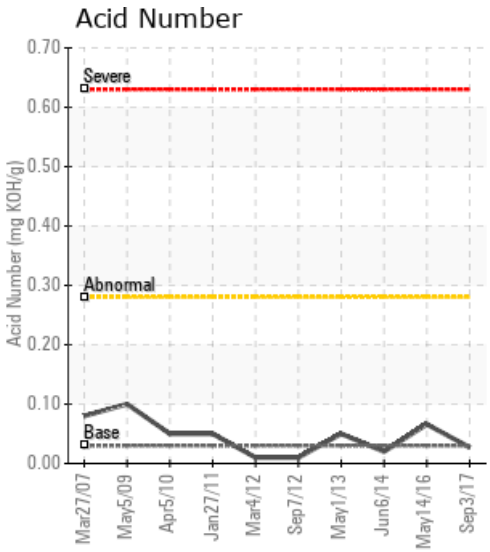

# LINE 2 FILLER HEATER SYSTEM

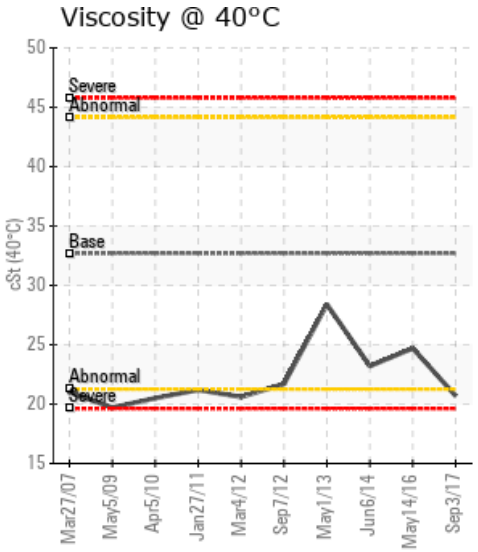
| Customer: PTRHTF10069 | System Information | Sample Information |
|---|---|---|
| CERTAINTEED - SAINT GOBAIN<br>3303 EAST 4TH AVENUE<br>SHAKOPEE, MN 55379 USA<br>Attn: Patrick Wallace<br>Tel:<br>E-Mail: patrick.wallace@saint-gobain.com | System Volume: 5670 gal<br>Bulk Operating Temp: 428F / 220C<br>Heating Source:<br>Blanket:<br>Fluid: PETRO CANADA CALFLO AF<br>Make: | Lab No: 02168849<br>Analyst: Gaston Arseneault<br>Sample Date: 09/03/17<br>Received Date: 09/12/17<br>Completed: 09/13/17<br>Gaston Arseneault<br>gaston.arseneault@hollyfrontier.com |

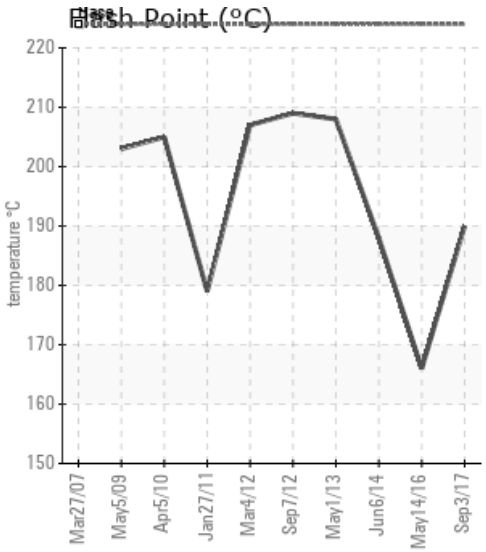
Recommendation: We can not explain why the oil viscosity dropped 20% yet the flash point increased by dozens of degrees. Anywho, no immediate action seems required at this time. Re-sample at next normal interval.

Comments: Visc @ 40°C is abnormally low. COC Flash 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 | % |
| 09/03/17 | 09/12/17 | 4.0y | MAIN SYSTEM FLOW | 374 / 190 | 0.00 | 20.7 | 0.027 | 0.042 | 682 / 361 | 785 / 419 | 891 / 477 | 3.93 |
| 05/14/16 | 05/24/16 | 0.0y | MAIN SYSTEM FLOW | 331 / 166 | 2.3 | 24.7 | 0.066 | 0.080 | 665 / 352 | 773 / 411 | 866 / 463 | 6.19 |
| 06/06/14 | 06/17/14 | 0.0y | MAIN FLOW NEAR PUMP | 370 / 188 | 3.2 | 23.2 | 0.02 | 0.034 | 669 / 354 | 783 / 417 | 888 / 475 | 6.18 |
| 05/01/13 | 05/15/13 | 0.0y | MAIN SYSTEM FLOW | 406 / 208 | 54.3 | 28.4 | 0.05 | 0.112 | 688 / 365 | 774 / 412 | 874 / 468 | 1.07 |
| 09/07/12 | 09/12/12 | | MIAN FLOW NEAR MAIN | 408 / 209 | 21 | 21.7 | 0.01 | 0.06 | 683 / 362 | 762 / 405 | 852 / 456 | 2.812 |
| | | | | | | | | | | | | |
| Baseline Data | | | | 435 / 224 | | 32.7 | 0.03 | | 693 / 367 | 790 / 421 | 887 / 475 | 2.5 |

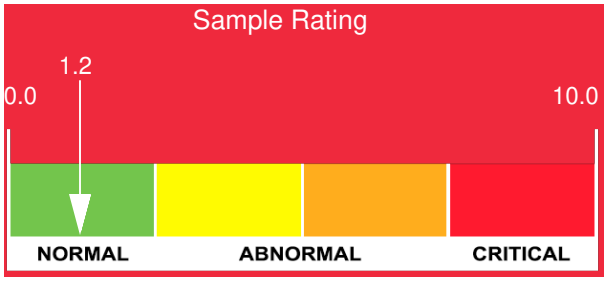


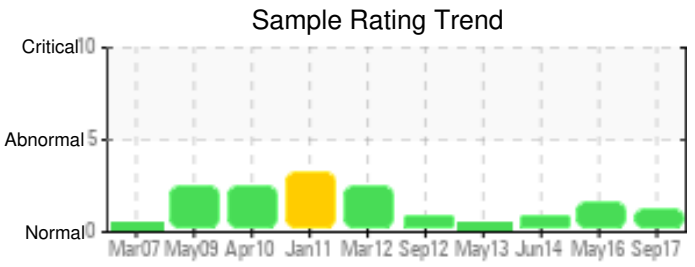



PETRO-CANADA LUBRICANTS

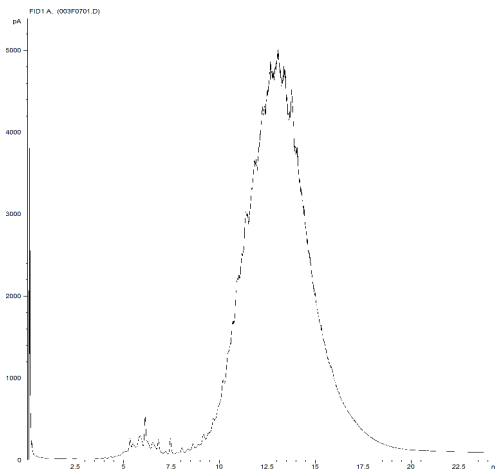


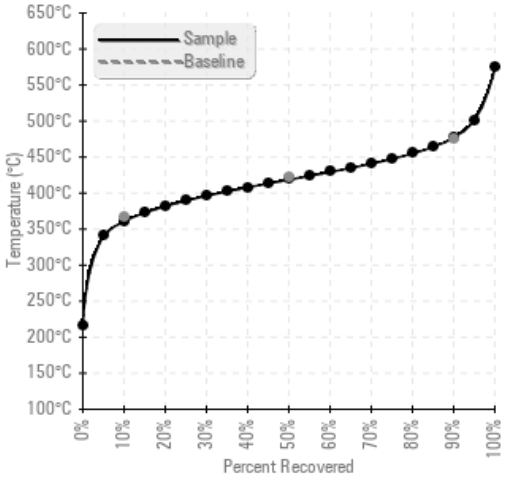

| Sample Date | Iron | Chromium | Nickel | Aluminum | Copper | Lead | Tin | Cadmium | Silver | Vanadium | Silicon | Sodium | Potassium | Titanium | Molybdenum | Antimony | Manganese | Lithium | Boron | Magnesium | Calcium | Barium | Phosphorus | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09/03/17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 |
| 05/14/16 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 |
| 06/06/14 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 69 | 0 |
| 05/01/13 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 163 | 1 |
| 09/07/12 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 34 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Baseline Data | | | 0 | 0 | | | | | | 0 | | | 0 | 0 | | | | | 0 | | | | 270 | |

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

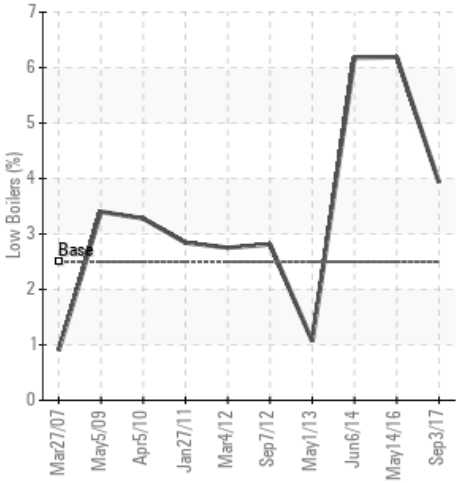
GCD Spectrum



Gas Chromatography Distillation




% Boiling < 335°C




## Historical Comments

| | |
|---|---|
| 05/14/16 | COC Flash Point is abnormally low. GCD % at 335C is marginally high at 6.19% and should consider venting. Other properties look good. Resample next interval to monitor. |
| 06/06/14 | The oil carries a certain amount of low boilers. We recommend to vent them out and replace lost volume with fresh oil addition. COC Flash Point is marginally low. |
| 05/01/13 | Overall the fluid is in excellent condition. We see a jump in viscosity, but also an increase in the additive concentration that is likely due to an addition of fresh Calflo AF. Please continue to sample at the regular interval (9-12 months). |
| 09/07/12 | The oil appears to be similar to previous samples. We do notice a slight viscosity increase but the additives also went up so this is likely due to a small addition of fresh Calflo AF. Overlall there is no apparent changes to this fluid besides what is observed due to the addition. |
| | |