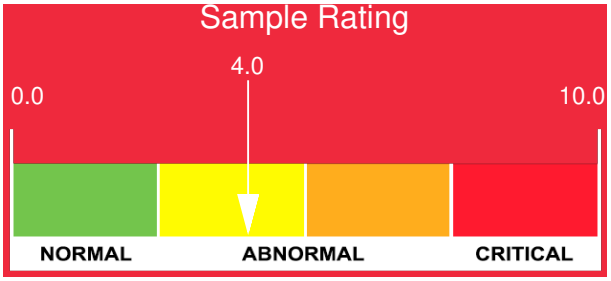
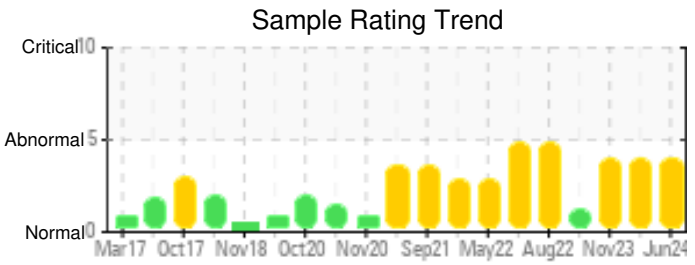
PETRO-CANADA LUBRICANTS



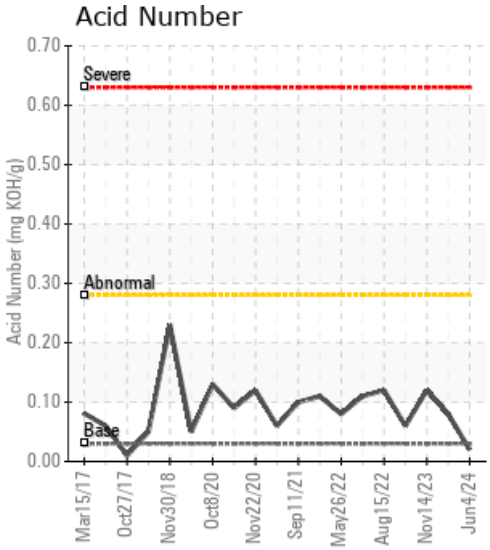

# TFS H/O SYSTEM #1

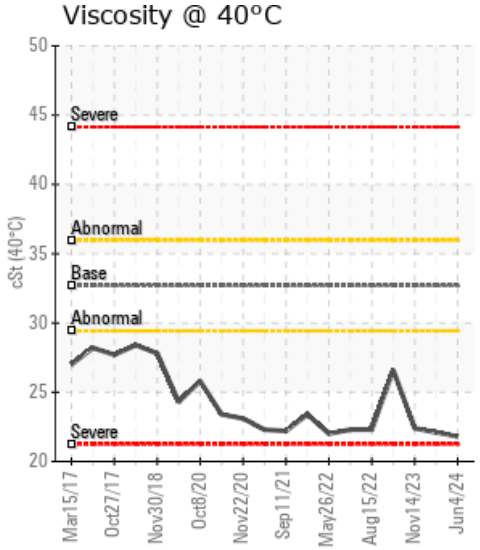
| Customer: PTRHTF10176 | System Information | Sample Information |
|---|---|---|
| CERTAINTEED ROOFING<br>100 CERTAINTEED DR<br>JONESBURG, MO 63351 US<br>Attn: Jeff Montgomery<br>Tel: (952)261-9532<br>E-Mail: jeffrey.d.montgomery@saint-gobain.com | System Volume: 4462 gal<br>Bulk Operating Temp: 553F / 289C<br>Heating Source:<br>Blanket:<br>Fluid: PETRO CANADA CALFLO AF<br>Make: FSE | Lab No: 02642726<br>Analyst: Neil Buchanan<br>Sample Date: 06/04/24<br>Received Date: 06/18/24<br>Completed: 07/02/24<br>Neil Buchanan<br>neil.buchanan@HFSinclair.com |

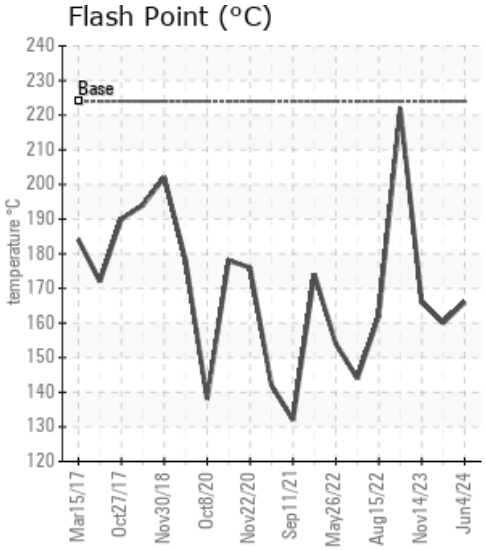
Recommendation: Flash point and 10% GCD are lower than desired but typical of this system. High operating temperature contributing to the formation of low boilers. More water than typical at 436 ppm. Suggest venting to remove water vapor and low boilers.

Comments: COC Flash Point is abnormally low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% 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 | % |
| 06/04/24 | 06/18/24 | 0.0y | side stream filter | 331 / 166 | 436 | 21.8 | 0.02 | 0.066 | 635 / 335 | 788 / 420 | 900 / 482 | 9.50 |
| 04/12/24 | 04/22/24 | 0.0y | side stream filter | 320 / 160 | 18 | 22.1 | 0.08 | 0.103 | 642 / 339 | 790 / 421 | 902 / 484 | 9.05 |
| 11/14/23 | 11/16/23 | 7.0y | SIDE STREAM FILTER | 331 / 166 | 9.9 | 22.4 | 0.12 | 0.077 | 625 / 329 | 785 / 419 | 892 / 478 | 10.14 |
| 11/14/22 | 11/22/22 | 0.0y | | 432 / 222 | 9.0 | 26.6 | 0.06 | 0.075 | 691 / 366 | 805 / 430 | 922 / 495 | 4.29 |
| 08/15/22 | 08/29/22 | 0.0y | | 324 / 162 | 92.8 | 22.3 | 0.12 | 0.064 | 634 / 334 | 786 / 419 | 898 / 481 | 9.62 |
| Baseline Data | | | | 435 / 224 | | 32.7 | 0.03 | | 693 / 367 | 790 / 421 | 887 / 475 | 2.5 |

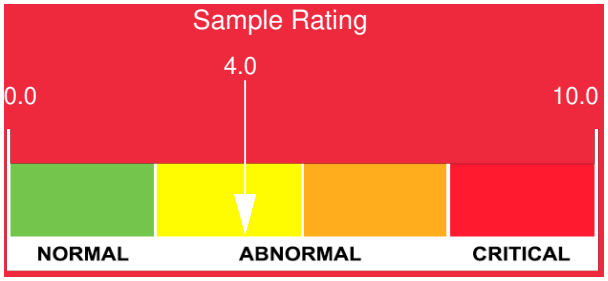


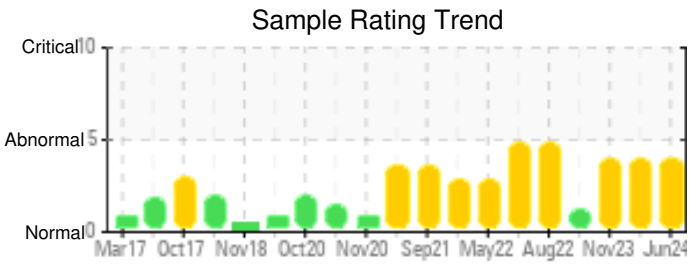



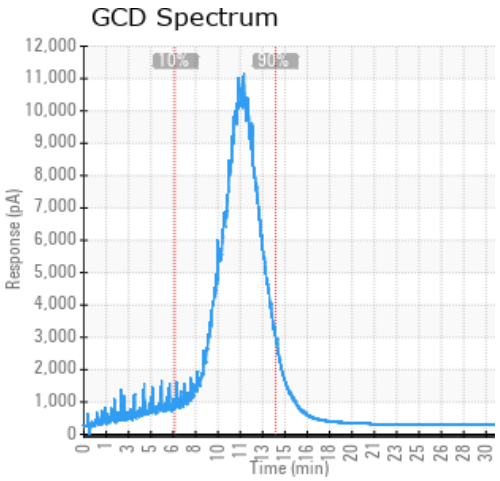
PETRO-CANADA LUBRICANTS

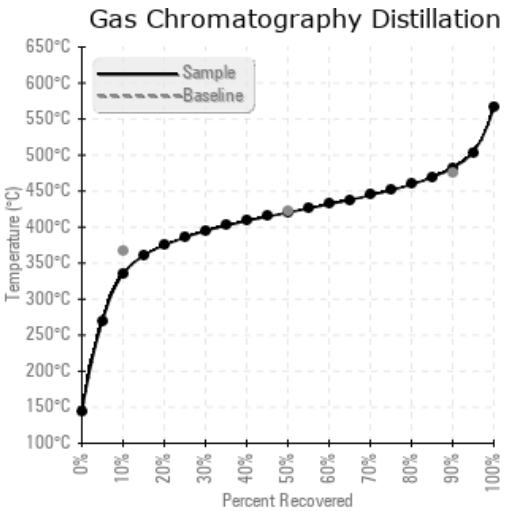


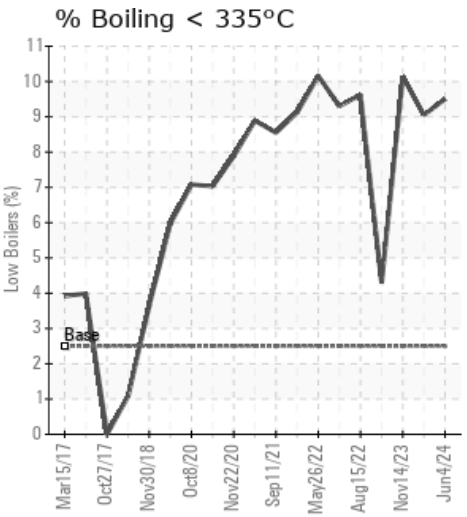




| Sample Date | Iron | Chromium | Nickel | Aluminum | Copper | Lead | Tin | Cadmium | Silver | Vanadium | Silicon | Sodium | Potassium | Titanium | Molybdenum | Antimony | Manganese | Lithium | Boron | Magnesium | Calcium | Barium | Phosphorus | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06/04/24 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 0 |
| 04/12/24 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 0 |
| 11/14/23 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 0 |
| 11/14/22 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 0 |
| 08/15/22 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Baseline Data | | | 0 | 0 | | | | | | 0 | | | 0 | 0 | | | | | 0 | | | | 270 | |

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




## Historical Comments

| | |
|---|---|
| 04/12/24 | Flash point is severely low and GCD shows the formation of light ends. Consider safely venting through the expansion tank and resample. COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. |
| 11/14/23 | Flash point is marginally low and this correlates to the higher GCD % below 335C. Consider venting low boilers through the expansion tank. Resample next interval to monitor. COC Flash Point is abnormally low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. |
| 11/14/22 | No indication of asphalt contamination. GCD at 90% is slightly higher than normal. Resample at the next interval to monitor. (GCD) 90% Distillation Point is abnormally high. Visc @ 40°C is abnormally low. |
| 08/15/22 | Flash point and viscosity remain abnormally low. GCD % <335C is elevated and the GCD graph shows the presence of low boilers from thermal degradation. Fluid should be safely vented through the expansion tank or a partial or full fluid change should be made. COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. |
| | |