

[CENOVUS PECO / 12-01-49-16W5] H800

Customer: PTRHTF20024

CENOVUS PECO PLANT
PECO GAS PLANT12-1-49-16w5
EDSON, AB Canada
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System Information

System Volume: 12000 ltr
Bulk Operating Temp: 410F / 210C
Heating Source:
Blanket:
Fluid: PETRO CANADA CALFLO HTF
Make: PRO FAB CANADIAN

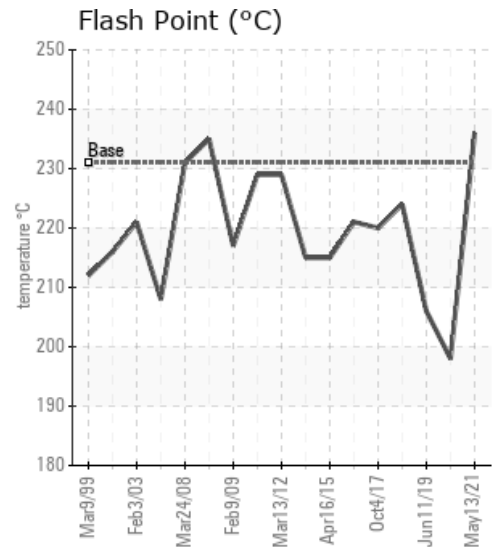
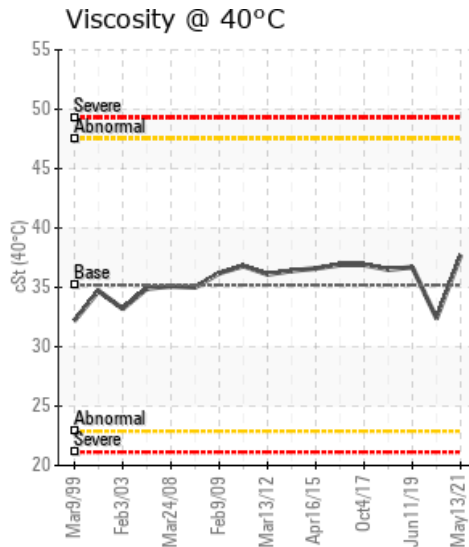
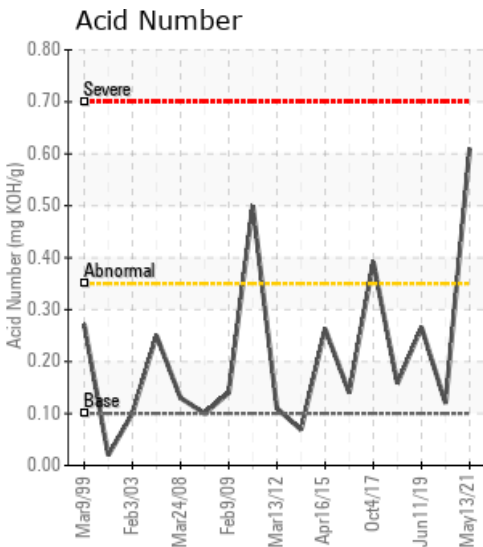
Sample Information

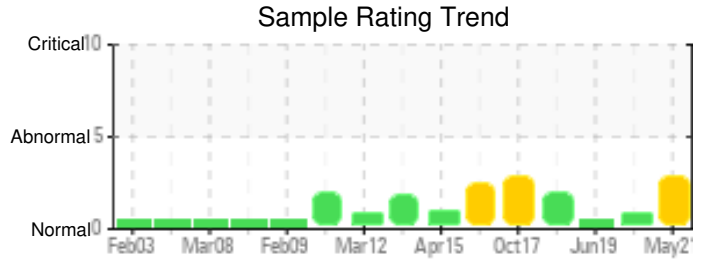
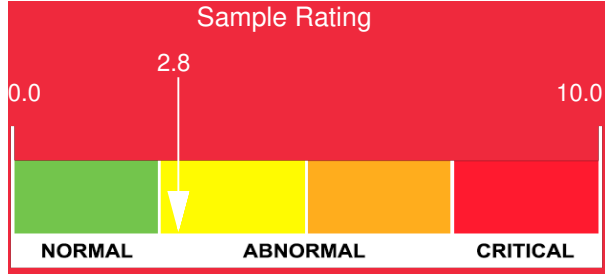
Lab No: 02421972
Analyst: Kevin McDermott
Sample Date: 05/13/21
Received Date: 05/18/21
Completed: 05/25/21
Kevin McDermott
kevin.mcdermott@hollyfrontier.com

Recommendation: Acid Number is higher than normal but not severe, likely from oxidation. Oxidation can be prevented by maintaining blanket gas on the surge tank at all times. The solids content is very high, should consider filtration to bring the solids content down to <0.3%. Otherwise the fluid is in good condition for further service.

Comments:

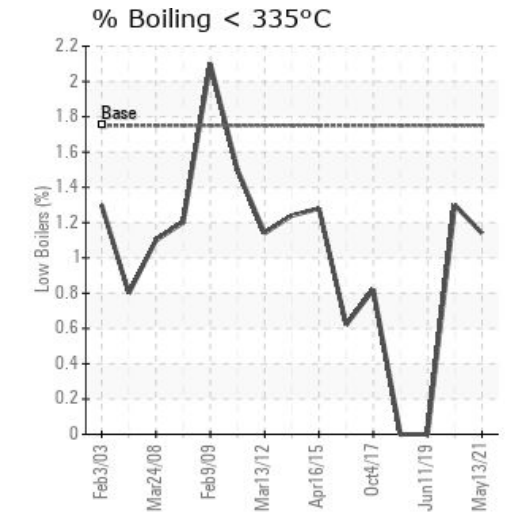
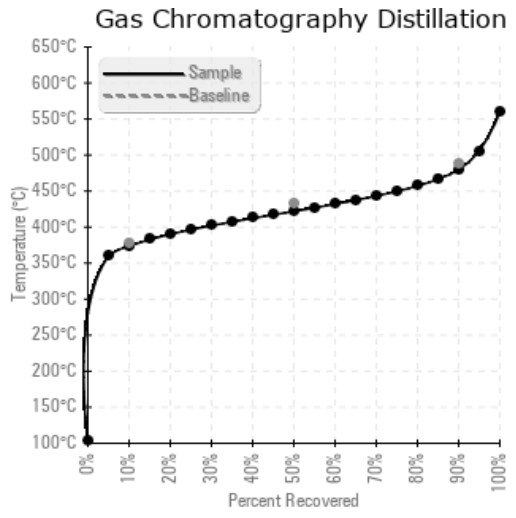
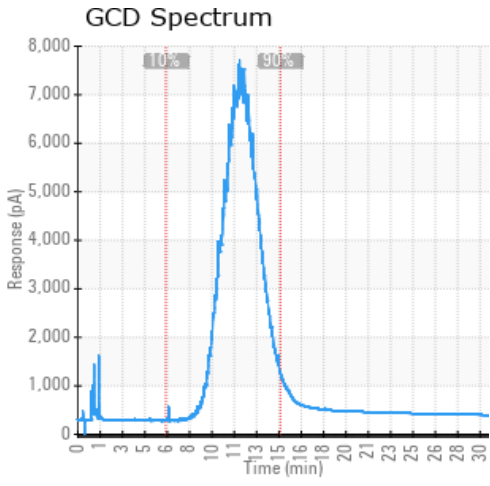
| Sample Date | Received Date | Fluid Age | Sample Location | Flash Point (COC) | Water (KF) | Viscosity (40°C) | Acid Number | Solids | GCD 10% | GCD 50% | GCD 90% | GCD % < 335°C |
|----------------------|---------------|-----------|---------------------|-------------------|------------|------------------|-------------|--------|-----------|-----------|-----------|---------------|
| | mm/dd/yy | | | °F/°C | ppm | cSt | mg/KOH/g | %wt | °F/°C | °F/°C | °F/°C | % |
| 05/13/21 | 05/18/21 | 0.0y | Low level shut down | 457 / 236 | 10.5 | 37.7 | 0.61 | 1.48 | 704 / 373 | 792 / 422 | 896 / 480 | 1.14 |
| 03/09/20 | 04/08/20 | 0.0y | MAIN TANK LEVEL | 388 / 198 | 7.7 | 32.4 | 0.12 | 0.140 | 714 / 379 | 806 / 430 | 908 / 487 | 1.30 |
| 06/11/19 | 06/14/19 | 6.0y | TANK OUTLET | 403 / 206 | 22.0 | 36.7 | 0.266 | 0.275 | 706 / 374 | 800 / 427 | 901 / 483 | 0.00 |
| 04/11/19 | 04/18/19 | 0.0y | DISCHARGE OF PUMPS | 435 / 224 | 12.8 | 36.5 | 0.158 | 0.517 | 708 / 375 | 802 / 428 | 905 / 485 | 0.00 |
| 10/04/17 | 10/18/17 | 0.0y | | 428 / 220 | 17.0 | 36.9 | 0.392 | 0.830 | 702 / 372 | 800 / 427 | 903 / 484 | 0.82 |
| Baseline Data | | | | 448 / 231 | | 35.20 | .1 | | 712 / 378 | 810 / 432 | 910 / 488 | 1.75 |





| 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 |
|----------------------|------|----------|--------|----------|--------|------|-----|---------|--------|----------|---------|--------|-----------|----------|------------|----------|-----------|---------|-------|-----------|---------|--------|------------|------|
| 05/13/21 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84 | 0 |
| 03/09/20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 |
| 06/11/19 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 74 | 0 |
| 04/11/19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 72 | 0 |
| 10/04/17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 79 | 0 |
| Baseline Data | | | 0 | 0 | | | | | | 0 | | | 0 | 0 | | | | 0 | 0 | | | | 280 | |

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



| Historical Comments | |
|---------------------|---|
| 03/09/20 | Fluid appears to be in good condition. Rsample in 6 months. COC Flash Point is marginally low. |
| 06/11/19 | Fluid is in very good condition. The solids content and acid number that were marginally high a couple years ago are now in the normal range. Suggest annual sample submissions to proactively monitor fluid condition. |
| 04/11/19 | The fluid is in good condition and suitable for further use. The Pentane Insoluble (solids) content is borderline high. Consider filtration of the fluid while transferring from the temporary storage tank back into the system. Please re-sample after the system has been filled. Pentane Insolubles levels are abnormally high. |
| 10/04/17 | The TAN is elevated indication some oxidation has occurred. Pentane insolubles are high. Ensure gas blanket is operating. Resample in 6 months. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high. |

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