

[ATHABASCA OIL CORP / 08-28-078-10W4M] L4 (PAD D) LIESMER

Customer: PTRHTF20133
 ATHABASCA OIL CORP.
 LEISMER DEMONSTRATION PLANT
 LSD2-79-10-W4M
 NEAR CONKLIN, AB Canada
 Attn: George Ball
 Tel: (587)233-1312
 E-Mail: gball@atha.com

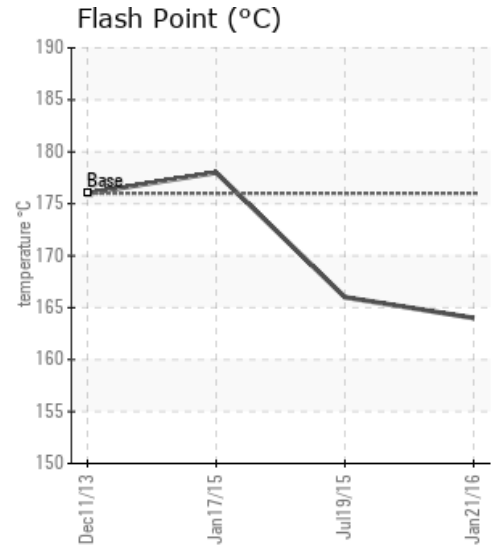
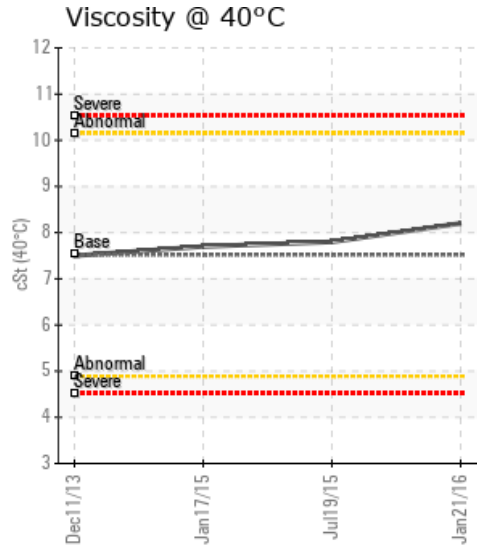
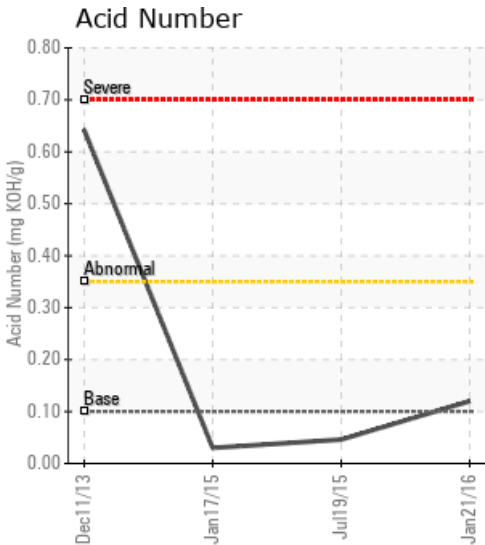
System Information
 System Volume: 8000 ltr
 Bulk Operating Temp: 212F / 100C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA CALFLO LT
 Make: TORNADO TECHNOLOGIES

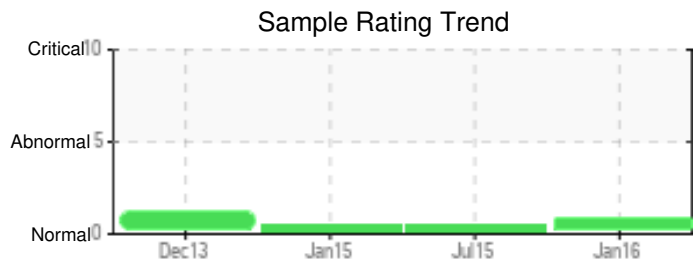
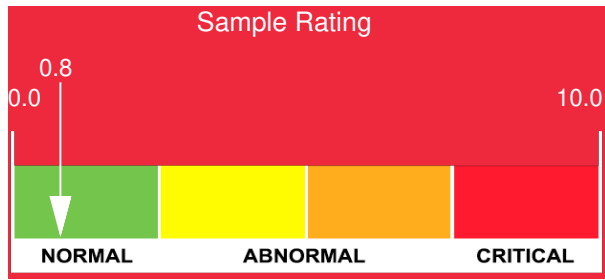
Sample Information
 Lab No: 02053159
 Analyst: Peter Harteveld
 Sample Date: 01/21/16
 Received Date: 02/11/16
 Completed: 02/22/16
 Peter Harteveld
 peter.harteveld@HFSinclair.com

Recommendation: The distillation curve of the fluid shows normal oxidation. The fluid is suitable for further use. Please re-sample in 12 months. Indicate fluid service life at next sample.

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

| 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 | % |
| 01/21/16 | 02/11/16 | 0.0y | | 327 / 164 | 5.6 | 8.2 | 0.12 | 0.050 | 614 / 324 | 657 / 347 | 753 / 400 | 31.56 |
| 07/19/15 | 07/31/15 | 10.0y | | 331 / 166 | 0.3 | 7.8 | 0.046 | 0.030 | 621 / 327 | 664 / 351 | 749 / 398 | 25.46 |
| 01/17/15 | 01/26/15 | 4.5y | FLOW LINE | 352 / 178 | 6.7 | 7.7 | 0.03 | 0.033 | 612 / 322 | 648 / 342 | 736 / 391 | 32.94 |
| 12/11/13 | 01/15/14 | 2.0y | DISCHARGE PIPING | 349 / 176 | 133.7 | 7.5 | 0.642 | 0.137 | 610 / 321 | 655 / 346 | 743 / 395 | 36.42 |
| Baseline Data | | | | 349 / 176 | | 7.52 | 0.1 | | 604 / 318 | 640 / 338 | 734 / 390 | 35.0 |

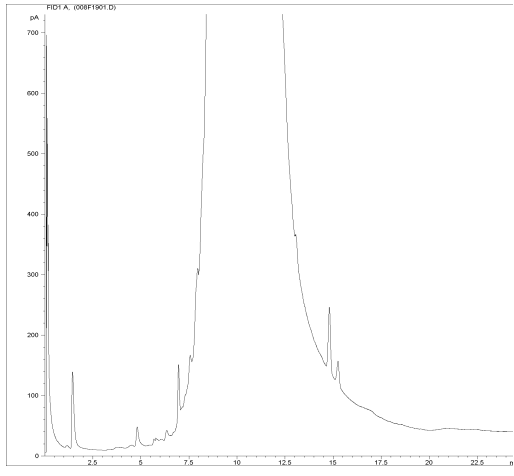




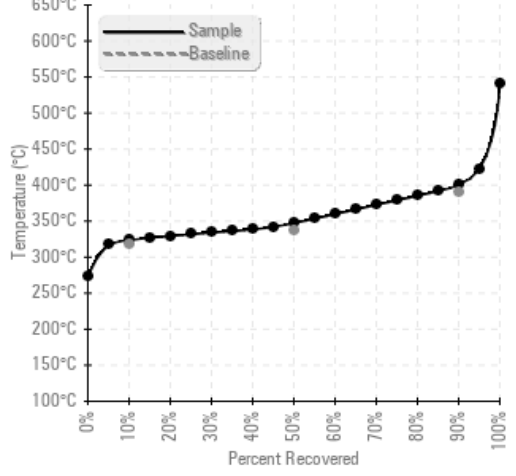
| Sample Date | Iron | Chromium | Nickel | Aluminum | Copper | Lead | Tin | Cadmium | Silver | Vanadium | Silicon | Sodium | Potassium | Titanium | Molybdenum | Antimony | Manganese | Lithium | Boron | Magnesium | Calcium | Barium | Phosphorus | Zinc | |
|----------------------|------|----------|--------|----------|--------|------|-----|---------|--------|----------|---------|--------|-----------|----------|------------|----------|-----------|---------|-------|-----------|---------|--------|------------|------|---|
| 01/21/16 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 124 | 0 |
| 07/19/15 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 155 | 0 |
| 01/17/15 | 18 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 199 | 0 |
| 12/11/13 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 | 0 |
| Baseline Data | | | 0 | 0 | | | | | | 0 | | 0 | 0 | | | | | | 0 | | | | | 270 | |

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

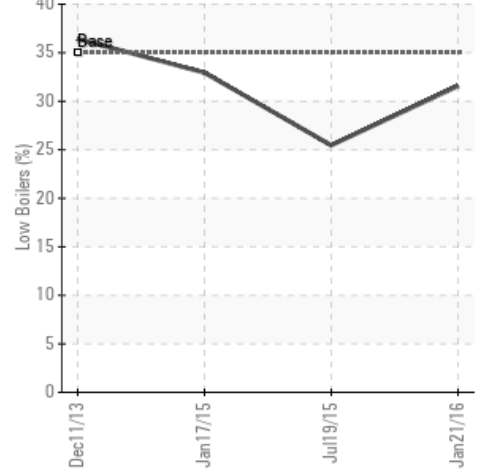
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



| Historical Comments | |
|---------------------|---|
| 07/19/15 | The fluid is in good condition and suitable for further use. Please re-sample in 6 months. |
| 01/17/15 | The fluid is in good condition and suitable for further use. Please re-sample in 6 months. |
| 12/11/13 | TAN is high. This is most likely the result of oxidation taking place in the expansion tank of the system. The reported fluid temperature in the expansion tank is 120 degrees C. Sweetening of the fill is recommended. When loss of efficiency is suspected an inspection of system internals is recommended. For now it is recommended to lower the fluid temperature in the expansion tank and provide a N2 blanket to prevent contact with air (oxygen) Acid Number (AN) is abnormally high. |

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