

[ATHABASCA OIL CORP / 14-22-078-10W4M] L2 (PAD B) LIESMER

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

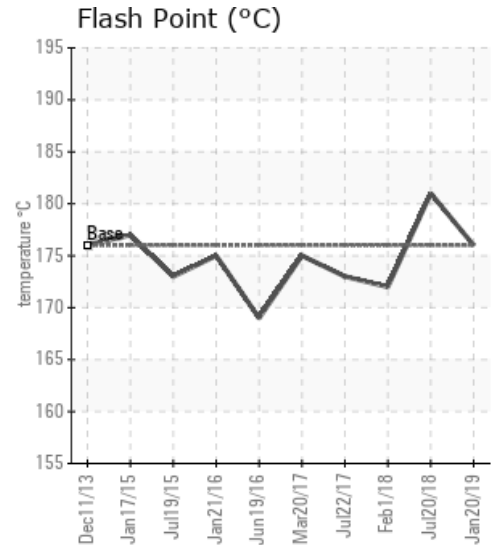
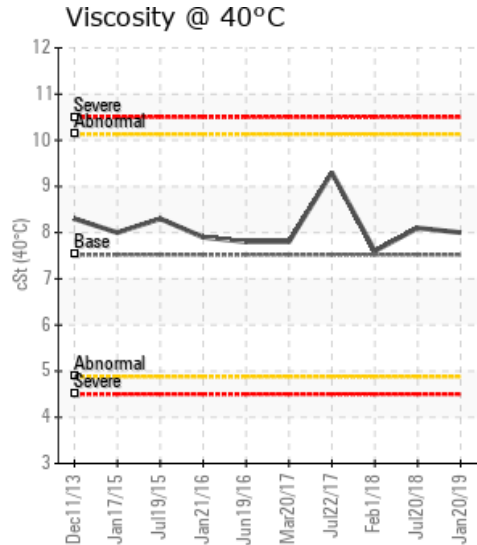
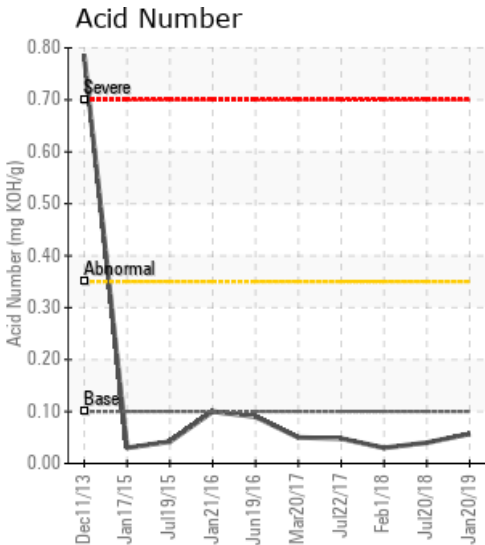
System Information
 System Volume: 8000 ltr
 Bulk Operating Temp: 212F / 100C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA CALFLO LT
 Make: TORNADO TECHNOLOGIES

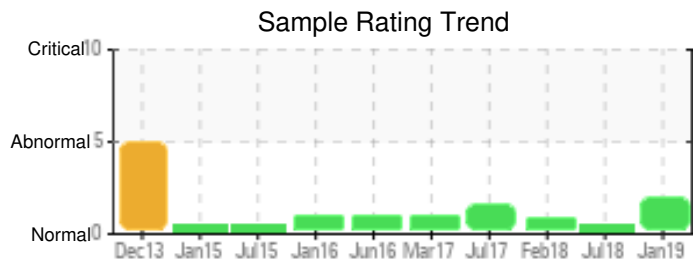
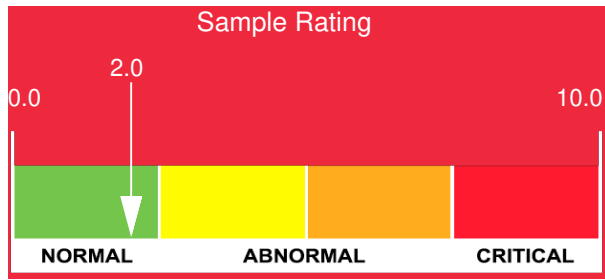
Sample Information
 Lab No: 02266855
 Analyst: Benjamin Latorre
 Sample Date: 01/20/19
 Received Date: 02/08/19
 Completed: 02/22/19
 Benjamin Latorre
 benjamin.latorre@HFSinclair.com

Recommendation: Results normal. Resample at next interval.

Comments: Wear levels low/normal. Contamination low/normal. (GCD) % < 335 C 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	%
01/20/19	02/08/19	0.0y		349 / 176	7.9	8.0	0.057	0.014	591 / 311	632 / 333	720 / 382	50.77
07/20/18	08/10/18	3.0y	+/- 100M FROM HEATER	358 / 181	0.00	8.1	0.04	0.010	613 / 323	651 / 344	737 / 391	38.19
02/01/18	02/21/18	2.5y		342 / 172	7.0	7.6	0.03	0.006	613 / 323	653 / 345	740 / 394	35.48
07/22/17	08/08/17	0.0y		343 / 173	0.00	9.3	0.048	0.010	612 / 322	670 / 355	768 / 409	36.45
03/20/17	04/05/17	24.0y		347 / 175	0.00	7.8	0.05	0.046	611 / 322	648 / 342	735 / 391	38.38
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	35.0

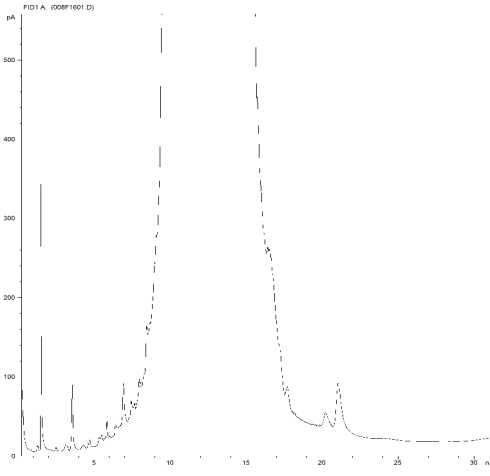




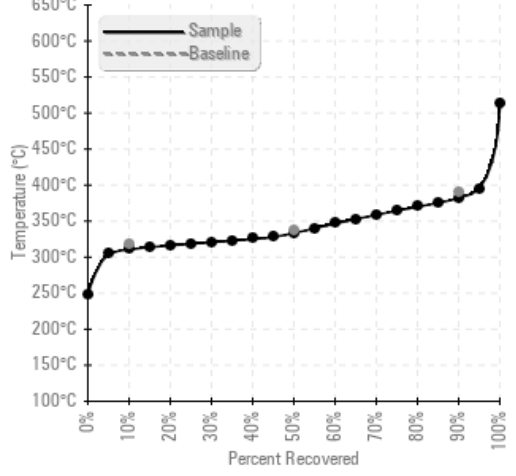
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc	
01/20/19	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	180	0	
07/20/18	5	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	190	0
02/01/18	7	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	191	0
07/22/17	8	0	0	0	0	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	203	0
03/20/17	8	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	212	0
Baseline Data			0	0						0			0	0					0					270	

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

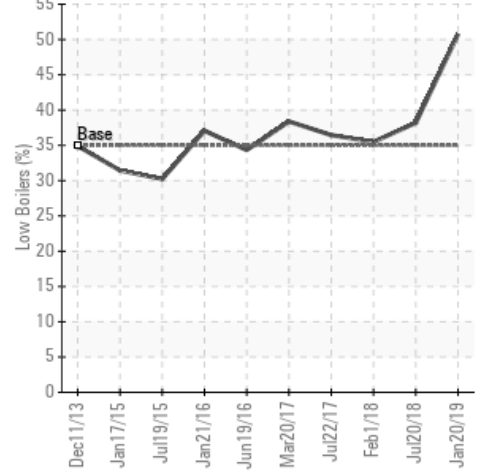
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments	
07/20/18	The fluid is in good condition and suitable for further use. The low boiler vapor content shows a minor increase from 35.48% to 38.19%. Therefore venting of these vapors to atmosphere on a regular basis is recommended. Please re-sample in 6 months.
02/01/18	The fluid is in good condition and suitable for further use. Please re-sample in 6 months.
07/22/17	The fluid is in good condition and suitable for further use but does show signs of oxidation. (50% and 90% GCD temperatures are high). Another reason for this can be top-up with a heavier fluid or ingress of process fluid. Please ensure the blanket gas system is functional. For data interpretation purposes it is important to list the service life of the fluid when sending in the next sample. Please re-sample in 12 months. (GCD) 90% Distillation Point is abnormally high. (GCD) 50% Distillation Point is marginally high.
03/20/17	The fluid is in good condition and suitable for further use. Please resample in 12 months.

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