

[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
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 E-Mail: gball@atha.com

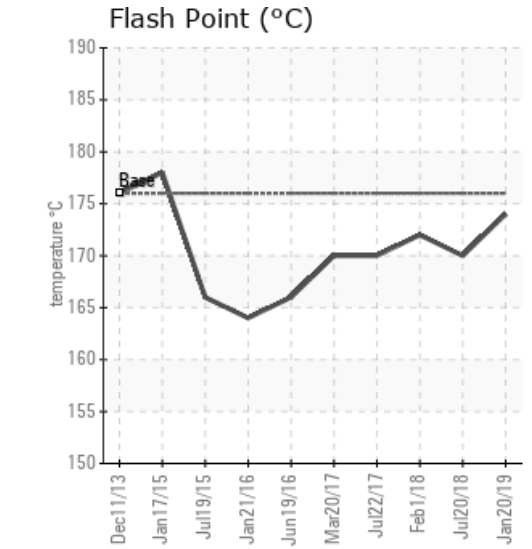
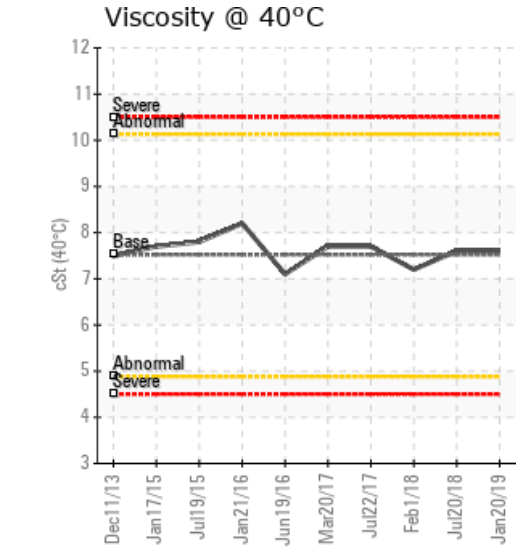
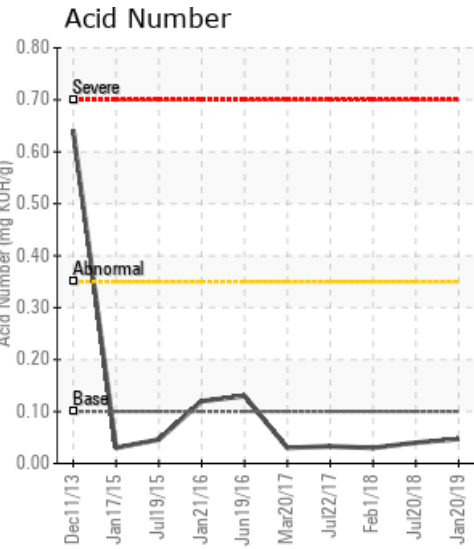
System Information
 System Volume: 8000 ltr
 Bulk Operating Temp: 212F / 100C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA CALFLO LT
 Make: TORNADO TECHNOLOGIES

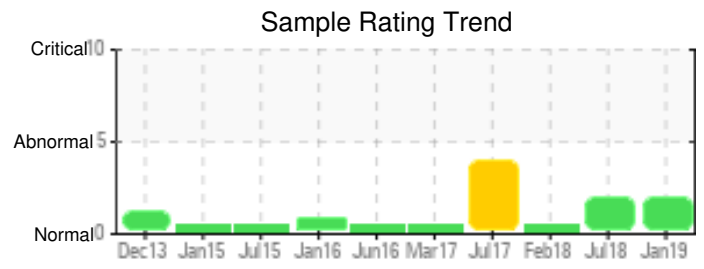
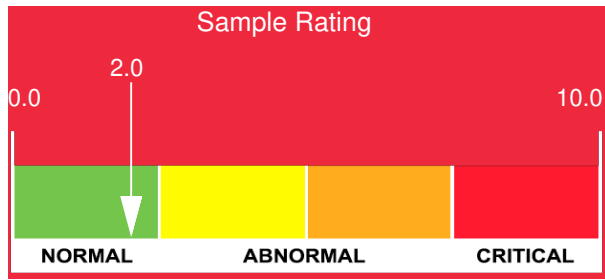
Sample Information
 Lab No: 02266856
 Analyst: Benjamin Latorre
 Sample Date: 01/20/19
 Received Date: 02/08/19
 Completed: 02/22/19
 Benjamin Latorre
 benjamin.latorre@HFSinclair.com

Recommendation: Results normal. Resample at next interval.

Comments: Low wear level. Low contaminants level. (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		345 / 174	8.5	7.6	0.047	0.013	592 / 311	625 / 330	717 / 381	54.09
07/20/18	08/10/18	3.0y	+/- 100M FROM HEATER	338 / 170	0.8	7.6	0.04	0.016	611 / 322	642 / 339	733 / 389	42.24
02/01/18	02/21/18	2.5y		342 / 172	4.8	7.2	0.03	0.005	611 / 322	643 / 340	735 / 391	39.54
07/22/17	08/08/17	0.0y		338 / 170	1.3	7.7	0.033	0.010	608 / 320	654 / 346	789 / 421	41.87
03/20/17	04/05/17	24.0y		338 / 170	0.00	7.7	0.03	0.042	611 / 322	645 / 340	737 / 392	38.61
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	35.0

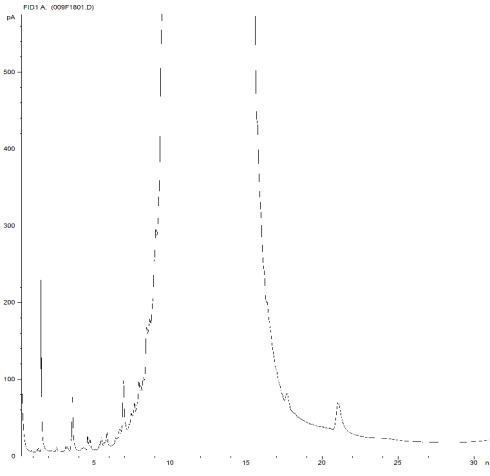




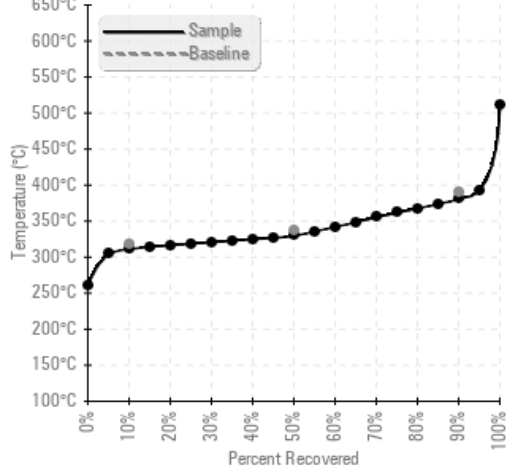
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/20/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	87	0
07/20/18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89	0
02/01/18	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	86	0
07/22/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83	0
03/20/17	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	0
Baseline Data			0	0						0			0	0					0				270	

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

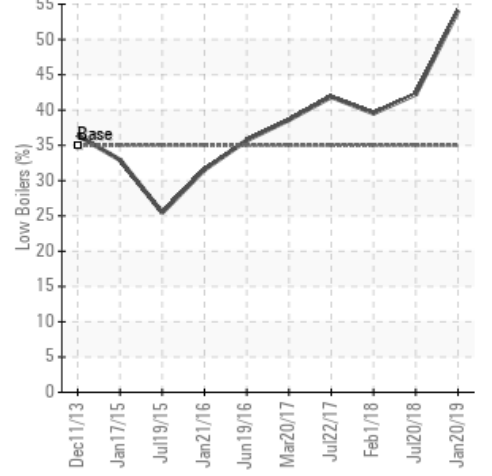
GCD Spectrum



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 has increased slightly from 39.54% to 42.24%. It is recommended to vent these low boiler vapors to atmosphere on a regular basis. Please re-sample in 6 months. (GCD) % < 335°C is marginally high.
02/01/18	The fluid is in good condition and suitable for further use. Low boiler vapor content is slightly high (GCD% <335C = 39.54%). For fresh Calflo LT this is 35%. This is a result of normal thermal degradation of the fluid and can be rectified by venting low boiler vapor to atmosphere. Please re-sample in 6 months.
07/22/17	The fluid is in a good condition and suitable for further use. The analysis does show indications of degradation. The % boil-off <335C is elevated and the 90% GCD temperature is high. It is recommended to vent off low boiler vapors to atmosphere on a regular basis. (once per month) Please re-sample in 12 months and list fluid service life when sending in the sample. (GCD) 90% Distillation Point is severely high. (GCD) % < 335°C 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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