

[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 CA
 Attn: Ryan Genest
 Tel:
 E-Mail: rgenest@atha.com

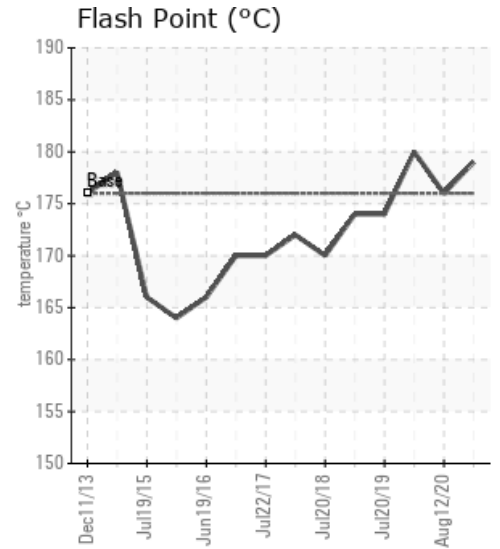
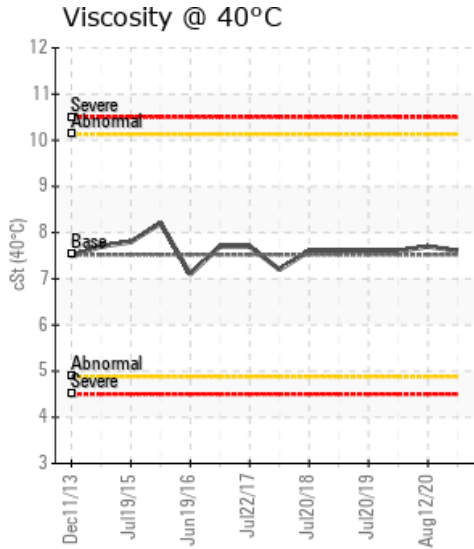
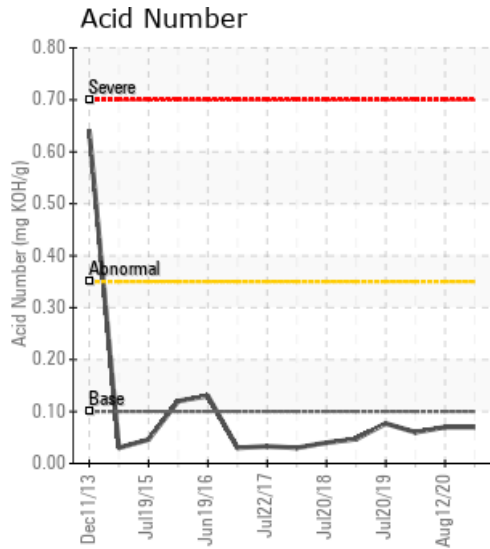
System Information
 System Volume: 8000 ltr
 Bulk Operating Temp: 212F / 100C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA CALFLO LT
 Make: TORNADO TECHNOLOGIES

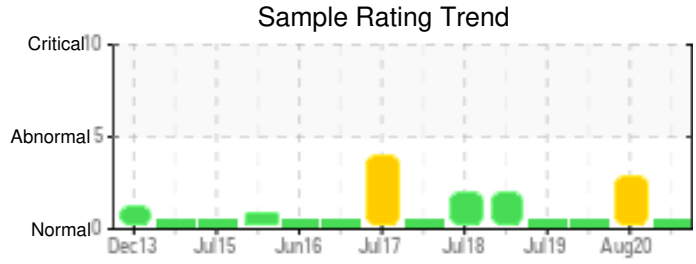
Sample Information
 Lab No: 02405700
 Analyst: Terry Veenstra
 Sample Date: 02/03/21
 Received Date: 02/24/21
 Completed: 03/01/21
 Terry Veenstra
 terry.veenstra@HFSinclair.com

Recommendation: Fluid is in good condition and good for continued use. Resample in 6 months

Comments:

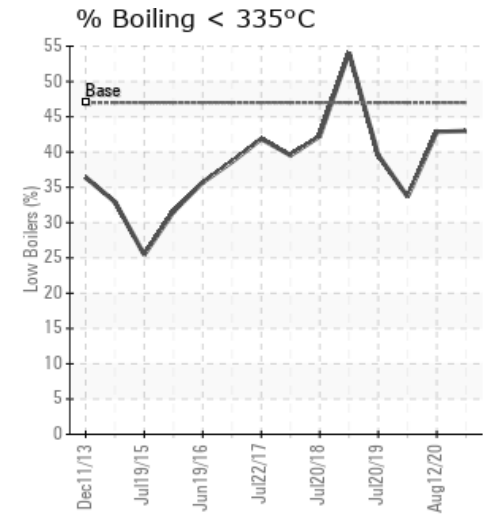
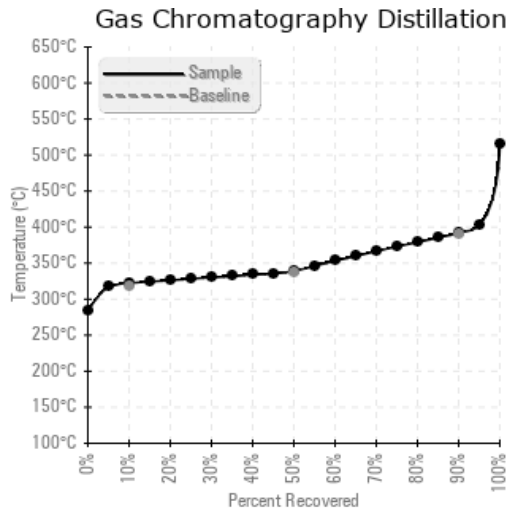
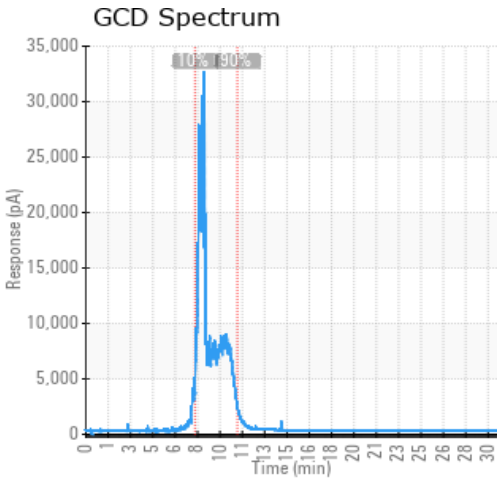
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/03/21	02/24/21	0.0y	Bott. of tracer tree	354 / 179	25.3	7.6	0.07	0.095	612 / 322	642 / 339	738 / 392	42.98
08/12/20	08/31/20	0.0y	PT0285	349 / 176	7.3	7.7	0.07	0.037	612 / 322	643 / 339	736 / 391	42.85
01/16/20	02/10/20	0.0y	HORM-12D-0008-001	356 / 180	0.00	7.6	0.060	0.032	606 / 319	652 / 345	747 / 397	33.68
07/20/19	08/09/19	0.0y		345 / 174	183.2	7.6	0.077	0.051	610 / 321	643 / 340	735 / 391	39.56
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
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	47.0





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
02/03/21	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	87	0
08/12/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	0
01/16/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89	0
07/20/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	0
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
Baseline Data			0	0						0			0	0				0	0				270	

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



Historical Comments	
08/12/20	The presence of metal fines may indicate process pump, mechanical seal, or valve wear. Pipe slag, bits of welding beads, sand, etc. are commonly found: a) in new systems after startup, or b) in older systems that have not been filtered. Insoluble solids measurements in excess of 50mg solids/100ml fluids, and especially in excess of 250mg solids/100ml fluids of particles above 10pm, call for installation of slip-stream filtration in the system where a modest pressure drop is available to filter a low flow slip stream (less than 1% of the main flow rate). This will minimize wear on mechanical components such as pumps and valves. While the sample has shown low or negligible elemental (Wear Metal) results, the system can benefit from early intervention with a low flow, off-line (aka kidney-loop) filtration procedure. Resample after filtration.
01/16/20	Resample at the next scheduled interval. Wear metals are low. Contaminant level low. Fluid is in good condition.
07/20/19	Test results are normal. No immediate action required. Resample at the next interval.
01/20/19	Results normal. Resample at next interval. Low wear level. Low contaminants level. (GCD) % < 335°C is marginally high.

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