

## [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

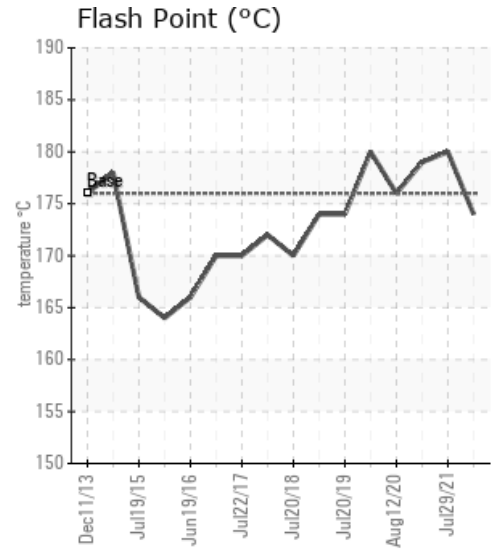
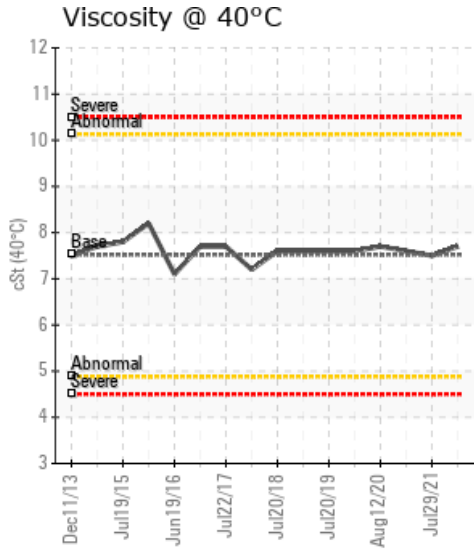
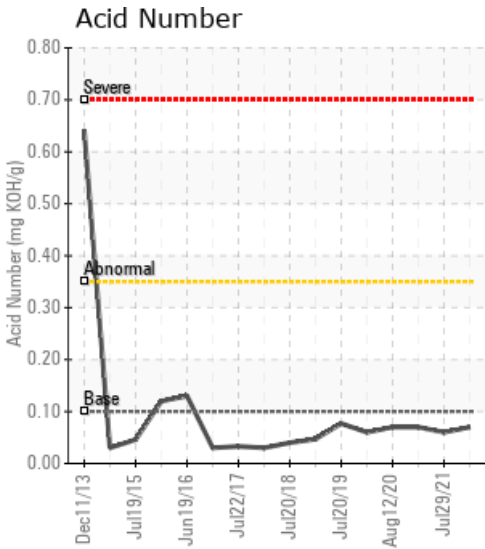
**System Information**  
 System Volume: 8000 ltr  
 Bulk Operating Temp: 212F / 100C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA CALFLO LT  
 Make: TORNADO TECHNOLOGIES

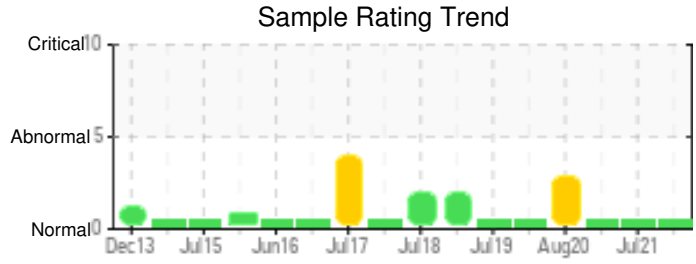
**Sample Information**  
 Lab No: 02470276  
 Analyst: Terry Veenstra  
 Sample Date: 01/21/22  
 Received Date: 02/04/22  
 Completed: 02/07/22  
 Terry Veenstra  
 terry.veenstra@hollyfrontier.com

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

Comments:

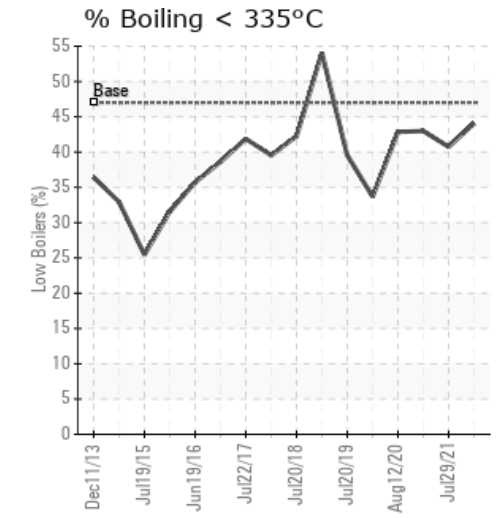
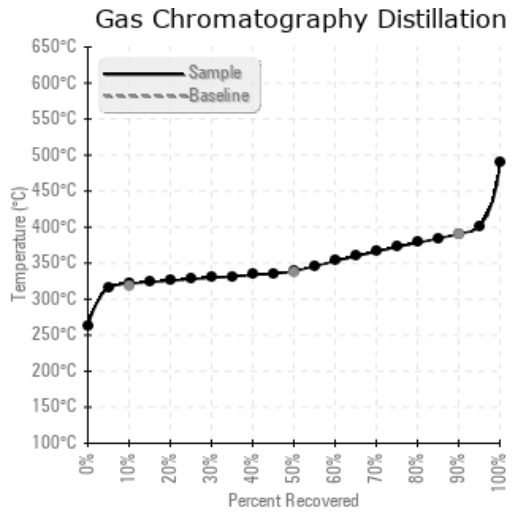
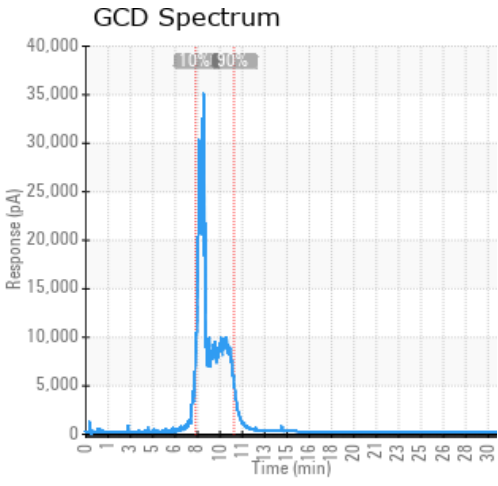
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/21/22	02/04/22	0.0y	system header	345 / 174	4.4	7.7	0.07	0.014	611 / 321	642 / 339	735 / 391	44.04
07/29/21	08/10/21	0.0y	pit 12d-0285	356 / 180	10.3	7.5	0.06	0.035	613 / 323	642 / 339	733 / 390	40.73
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
<b>Baseline Data</b>				<b>349 / 176</b>		<b>7.52</b>	<b>0.1</b>		<b>604 / 318</b>	<b>640 / 338</b>	<b>734 / 390</b>	<b>47.0</b>





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
01/21/22	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	98	0
07/29/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	0
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
<b>Baseline Data</b>			0	0						0			0	0				0	0				270	

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



### Historical Comments

07/29/21	Fluid is in good condition and is suitable for continued use. Resample in 6 months.
02/03/21	Fluid is in good condition and good for continued use. Resample in 6 months
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.

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