

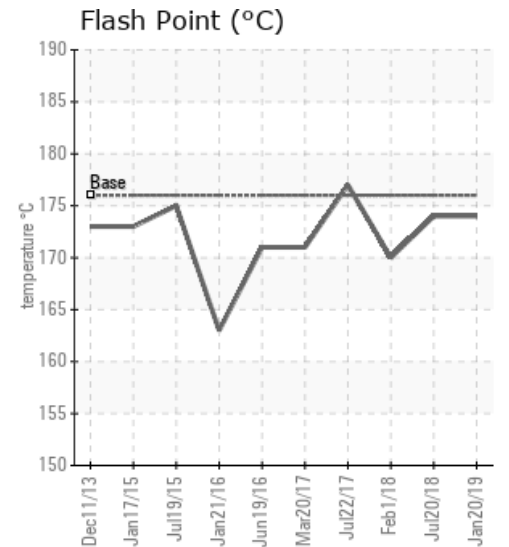
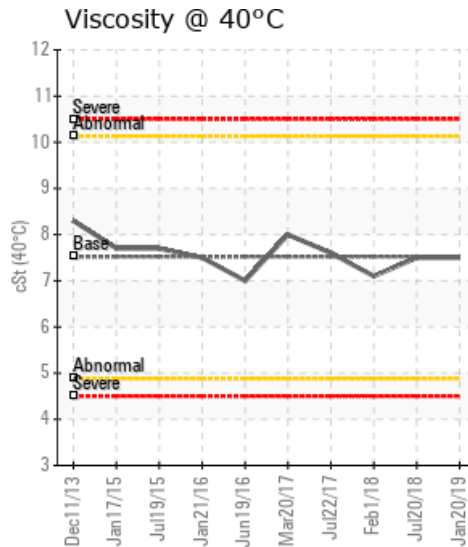
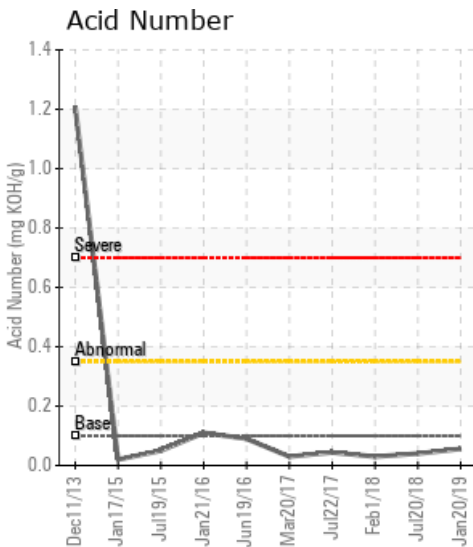
[ATHABASCA OIL CORP / 16-21-078-10W4M] L1 (PAD A) LIESMER

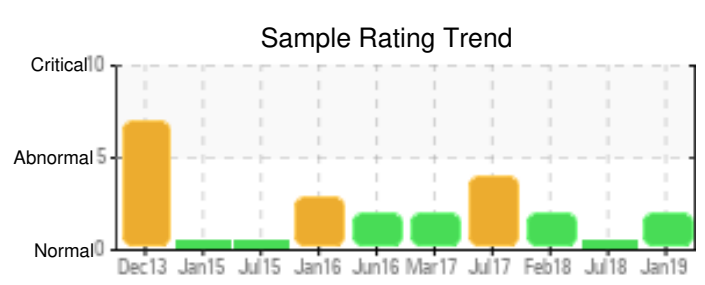
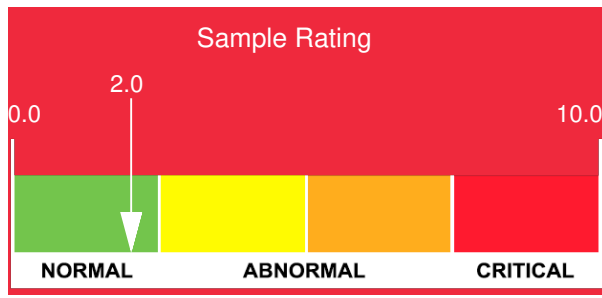
Customer: PTRHTF20133	System Information	Sample Information
ATHABASCA OIL CORP. LEISMER DEMONSTRATION PLANT LSD2-79-10-W4M NEAR CONKLIN, AB Canada Attn: Trevor Ip Tel: (403)724-3349 E-Mail: treip@statoil.com	System Volume: 8000 ltr Bulk Operating Temp: 212F / 100C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: TORNADO TECHNOLOGIES	Lab No: 02266857 Analyst: Benjamin Latorre Sample Date: 01/20/19 Received Date: 02/08/19 Completed: 02/22/19

Recommendation: Results normal. Resample at next interval.

Comments: Wear levels low/normal. Contamination levels low. (GCD) % < 335°C is marginally high.

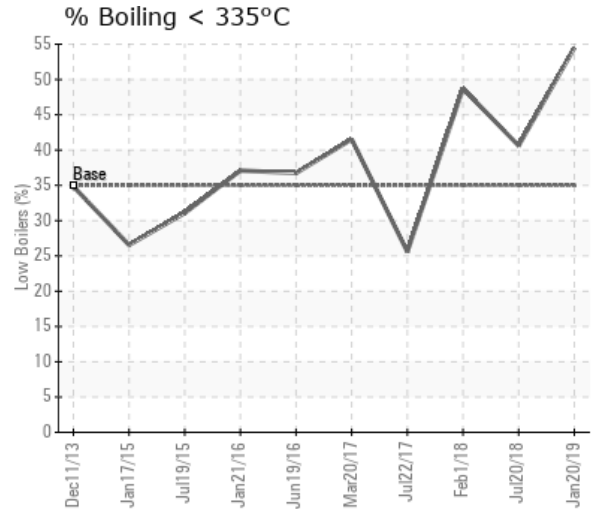
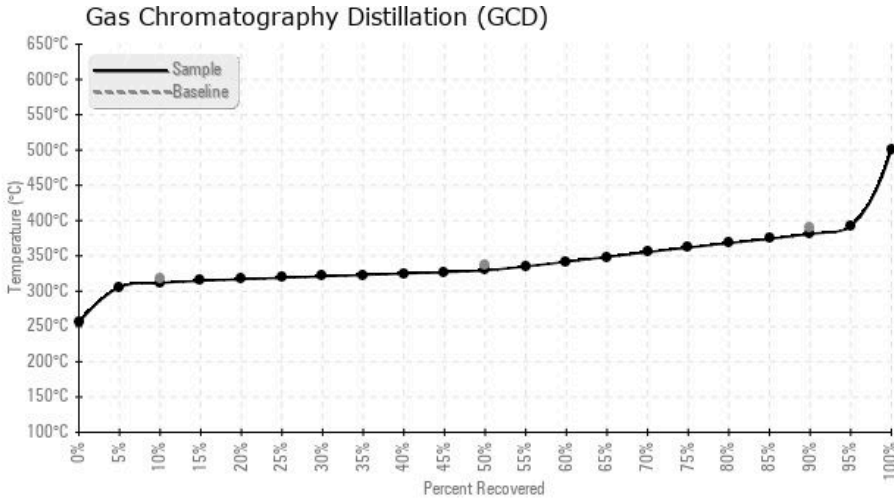
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/20/19	02/08/19	0y		345 / 174	6.0	7.5	0.056	0.007	593 / 312	625 / 330	718 / 381	54.47
07/20/18	08/10/18	3y	+/- 100M FROM HEATER	345 / 174	5.9	7.5	0.04	0.014	613 / 323	642 / 339	737 / 392	40.62
02/01/18	02/21/18	3y		338 / 170	4.8	7.1	0.03	0.004	608 / 320	635 / 335	727 / 386	48.72
07/22/17	08/08/17	0y		351 / 177	0.00	7.6	0.044	0.011	614 / 323	728 / 387	803 / 428	25.59
03/20/17	04/05/17	24y		340 / 171	0.00	8.0	0.03	0.043	609 / 321	642 / 339	744 / 396	41.52
06/19/16	07/05/16	18y	FLOW LINE	340 / 171	0.00	7.0	0.09	0.011	611 / 322	646 / 341	750 / 399	36.74
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	11	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	188	0
07/20/18	10	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	204	0
02/01/18	11	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	203	0
07/22/17	10	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	218	0
03/20/17	11	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	227	0
06/19/16	9	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	220	0
Baseline Data			0	0						0			0	0					0				270	

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



Historical Comments	
07/20/18	The fluid is in good condition and suitable for further use. The low boiler vapor content has decreased from 48.72% to 40.62%. Still slightly high but improved. Venting of these low boiler vapors 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. Low boiler vapor content is high (GCD% <335C = 48.72%). 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. (GCD) % < 335°C is abnormally high.
07/22/17	The fluid shows signs of degradation by oxidation. The 50% and 90% GCD temperatures are elevated. This can also be the result of adding a heavier fluid or ingress of process fluid. Ensure the blanket gas system is functional. The fluid is suitable for further use. Please re-sample in 6 months. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high.
03/20/17	Percentage boil-off <335 degrees C has increased. This can be the result of thermal degradation or ingress of blanket gas when fuel gas is used as blanket gas. It is recommended to vent-off low boiler vapors to atmosphere. The content of low boiler vapors is at this moment not a problem but it is recommended to vent off regularly to prevent problems. The fluid is in good condition and suitable for further use. Please resample after 6 months. (GCD) % < 335°C is marginally high.
06/19/16	The fluid is in good condition and suitable for further use. Please re-sample in 12 months.

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