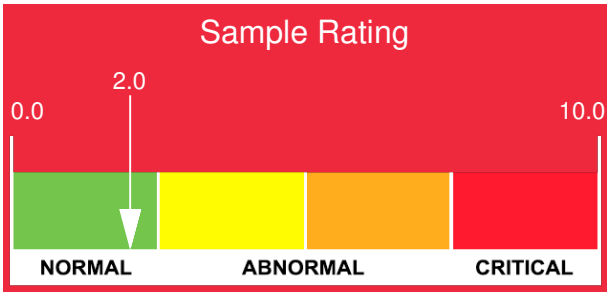
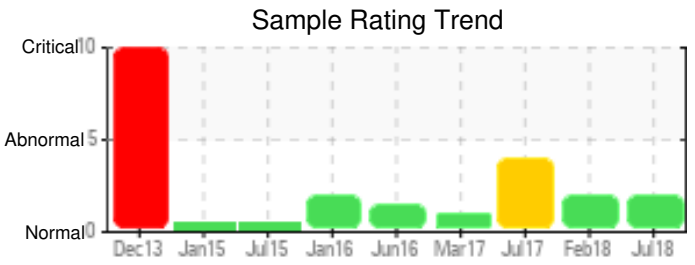




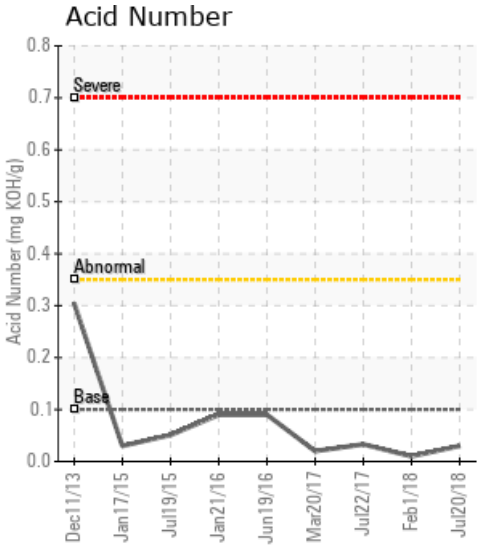
[ATHABASCA OIL CORP / 05-27-078-10W4M] L3 (PAD C) LIESMER

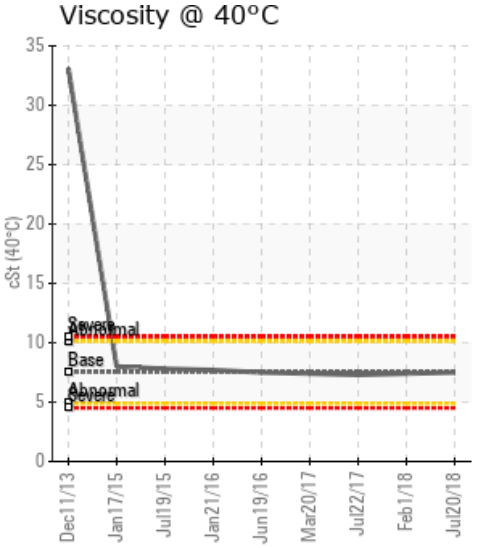
Customer: PTRHTF20133	System Information	Sample Information
ATHABASCA OIL CORP. LEISMER DEMONSTRATION PLANT LSD2-79-10-W4M NEAR CONKLIN, AB Canada Attn: George Ball Tel: x: E-Mail: gball@atha.com	System Volume: 8000 ltr Bulk Operating Temp: 212F / 100C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: TORNADO TECHNOLOGIES	Lab No: 02233041 Analyst: Peter Harteveld Sample Date: 07/20/18 Received Date: 08/10/18 Completed: 08/16/18

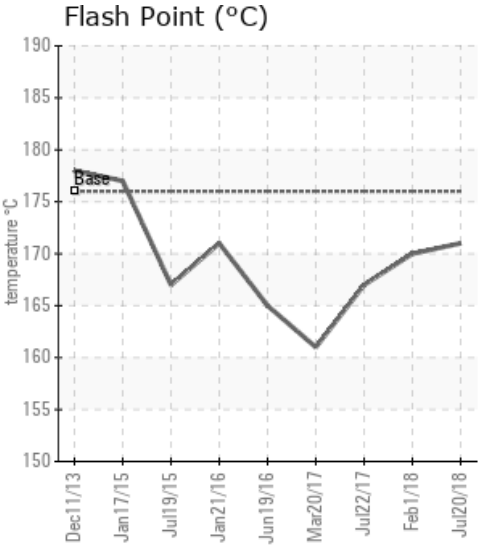
Recommendation: The fluid is in good condition and suitable for further use. The low boiler vapor content is slightly high but has remained approximately the same as in the previous sample. Continuation of venting on a regular basis is recommended. Please re-sample in 6 months.

Comments: (GCD) % < 335°C is marginally high.

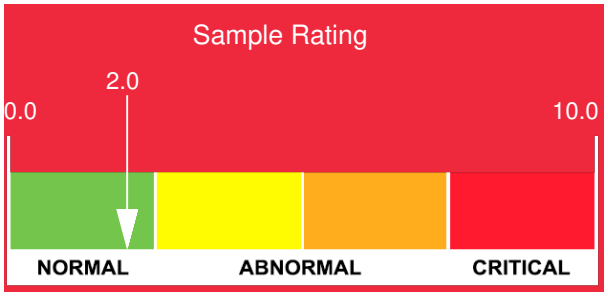
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/20/18	08/10/18	3y	+/- 100M FROM HEATER	340 / 171	5.4	7.5	0.03	0.007	610 / 321	642 / 339	731 / 389	42.64
02/01/18	02/21/18	3y		338 / 170	1.9	7.4	0.01	0.008	609 / 321	642 / 339	732 / 389	41.92
07/22/17	08/08/17	0y		333 / 167	36.3	7.3	0.033	0.017	608 / 320	655 / 346	772 / 411	41.20
03/20/17	04/05/17	24y		322 / 161	8.5	7.4	0.02	0.033	611 / 322	645 / 341	735 / 390	36.95
06/19/16	07/05/16	18y	FLOW LINE	329 / 165	6.7	7.5	0.09	0.013	611 / 322	647 / 342	742 / 394	36.53
01/21/16	02/11/16	0y		340 / 171	213.3	7.7	0.09	0.061	606 / 319	639 / 337	733 / 390	44.67
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	35.0

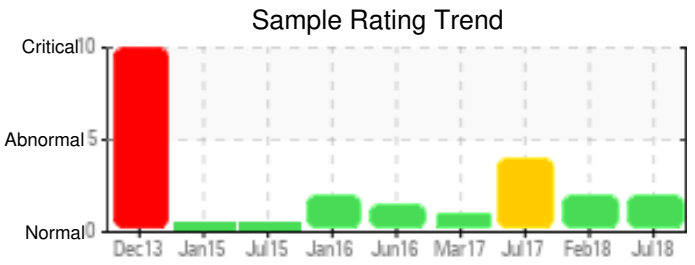






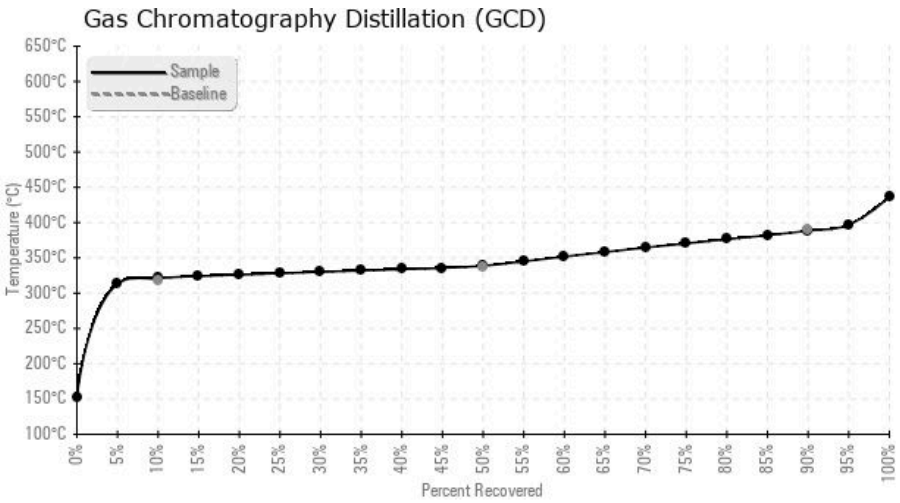
PETRO-CANADA LUBRICANTS

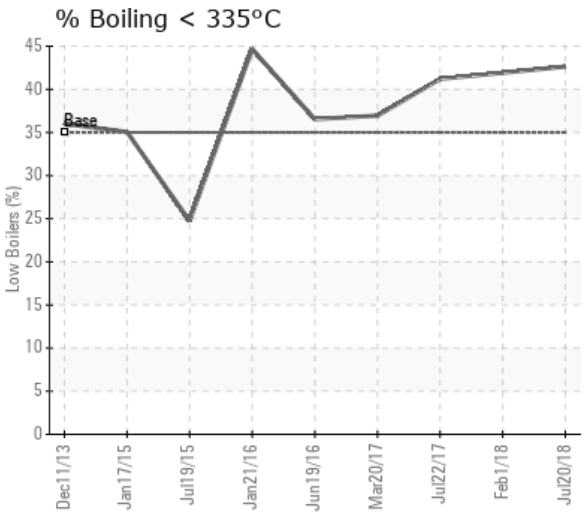




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
07/20/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	0
02/01/18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	0
07/22/17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	0
03/20/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0
06/19/16	5	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	45	0
01/21/16	19	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	87	0
Baseline Data			0	0						0			0	0					0				270	

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





Historical Comments

02/01/18	The fluid is in good condition and suitable for further use. The low boiler vapor content in the fluid is slightly high (GCD% <335 = 41.92%). For the fresh fluid this is 35%. Please start venting low boiler vapor to atmosphere.Re-sample in 6 months. (GCD) % < 335°C is marginally high.
07/22/17	The fluid is in a good condition and suitable for further use. It does show some degradation indicated by a higher percentage of boil-off <335C and an elevated 90% GCD temperature. It is recommended to vent-off low boiler vapors to atmosphere at a regular interval. (suggestion is once a month) Please re-sample in 12 months. (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.
06/19/16	The fluid is in good condition and suitable for further use. Please re-sample in 12 months.
01/21/16	Boil-off below 335 degrees C. has increased to 44.7%. This indicates an increased content of low boiler vapors as a result of thermal degradation of the fluid. Please vent the low boiler vapors to atmosphere. The fluid is suitable for further use. Re-sample in 6 months. Indicate fluid service life at next sample. (GCD) % < 335°C is marginally high.