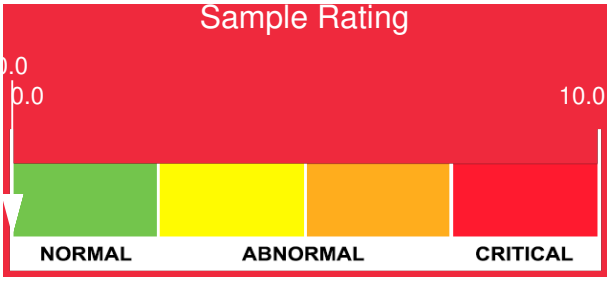
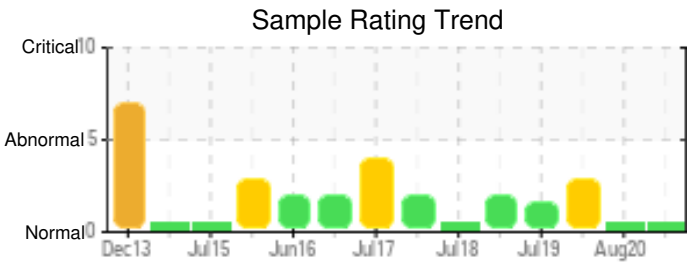
PETRO-CANADA LUBRICANTS





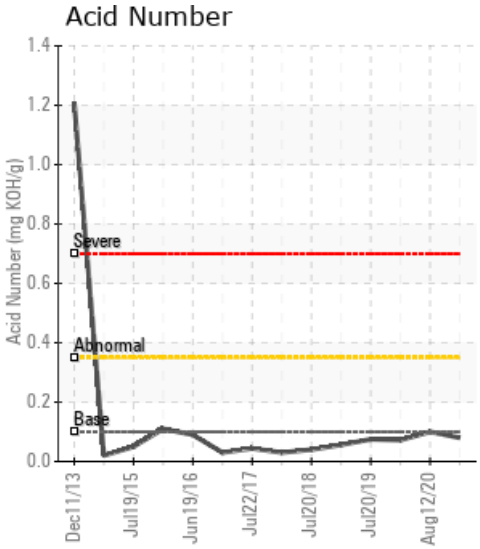
[ATHABASCA OIL CORP / 16-21-078-10W4M] L1 (PAD A) LIESMER

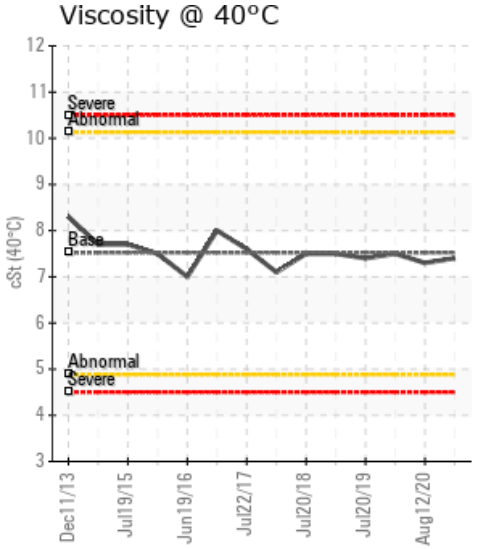
Customer: PTRHTF20133	System Information	Sample Information
ATHABASCA OIL CORP. LEISMER DEMONSTRATION PLANT LSD2-79-10-W4M NEAR CONKLIN, AB CA Attn: Ryan Genest Tel: E-Mail: rgenest@atha.com	System Volume: 8000 ltr Bulk Operating Temp: 212F / 100C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: TORNADO TECHNOLOGIES	Lab No: 02405698 Analyst: Terry Veenstra Sample Date: 02/03/21 Received Date: 02/24/21 Completed: 03/01/21 Terry Veenstra terry.veenstra@HFSinclair.com

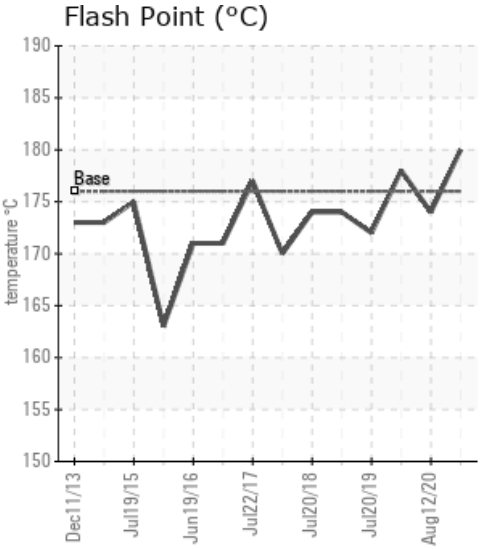
Recommendation: Fluid is in good condition and good for continued use. Resample in 6 months

Comments:

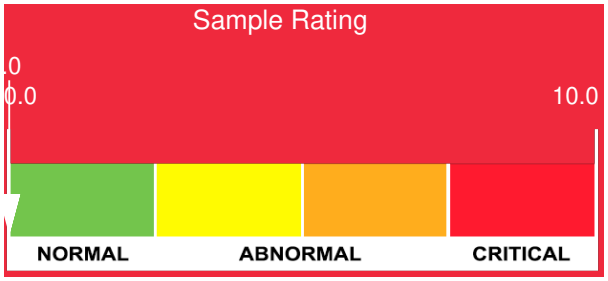
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/03/21	02/24/21	0.0y	Bott. of tracer tree	356 / 180	28.9	7.4	0.08	0.120	612 / 322	640 / 338	737 / 392	43.83
08/12/20	08/31/20	0.0y	PIT0285	345 / 174	50.5	7.3	0.10	0.048	612 / 322	640 / 338	737 / 392	44.26
01/16/20	02/10/20	0.0y	HORM-12A-0008-001	352 / 178	4.3	7.5	0.072	0.067	582 / 306	613 / 323	702 / 372	60.06
07/20/19	08/09/19	0.0y		342 / 172	628.6	7.4	0.075	0.060	610 / 321	642 / 339	737 / 391	39.98
01/20/19	02/08/19	0.0y		345 / 174	6.0	7.5	0.056	0.007	593 / 312	625 / 330	718 / 381	54.47
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	47.0

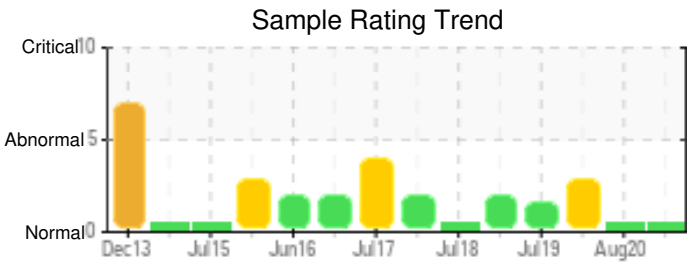






PETRO-CANADA LUBRICANTS

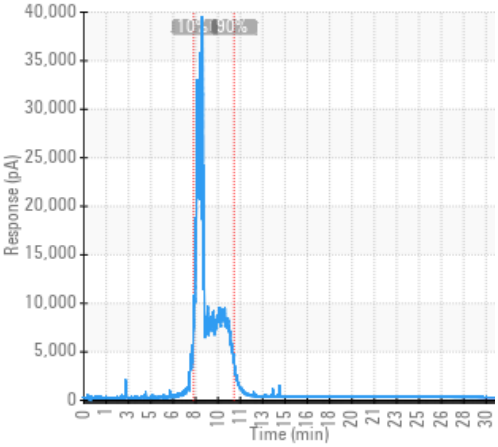




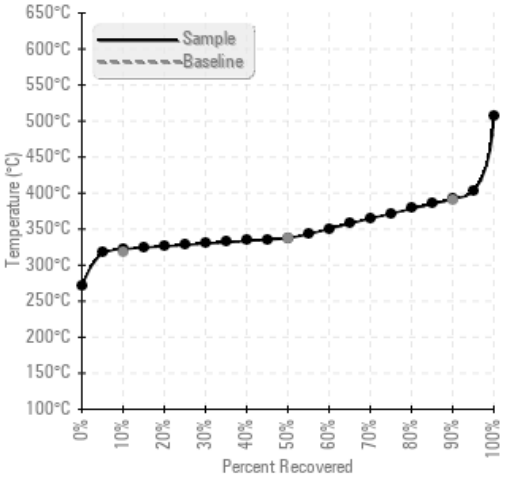
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
02/03/21	3	0	0	0	0	0	0	0	0	0	3	0	4	0	0	0	0	0	0	0	0	0	161	0
08/12/20	6	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	166	0
01/16/20	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	169	0
07/20/19	10	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	185	0
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
Baseline Data			0	0						0			0	0				0	0				270	

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

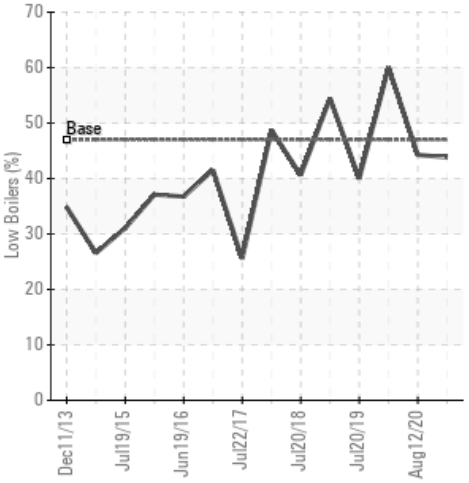
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

08/12/20	Results Normal. No action needed at this time. Resample at next scheduled date.
01/16/20	Consider venting of expansion tank to reduce low boilers. Resample after venting of expansion tank.Wear metals are low. Water contamination is low. (GCD) 90% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high.
07/20/19	Elevated water level (628.6 ppm). 1. Ensure temperature in the expansion tank is above 100 deg. C. to prevent vapor condensation. If it is normally below this value, avoid prolonged high temperatures in order to prevent oil oxidation. 2. Check if adding nitrogen to the expansion tank headspace is feasible. This removes water vapor from the tank as they are generated.3. Once pump suction is above 100 deg.C and system is stable, check for water at all low point drains in the expansion tank.4. Resample for water. Water contamination levels are abnormally high. ppm Water contamination levels are abnormally high.
01/20/19	Results normal. Resample at next interval.Wear levels low/normal. Contamination levels low. (GCD) % < 335°C is marginally high.

