

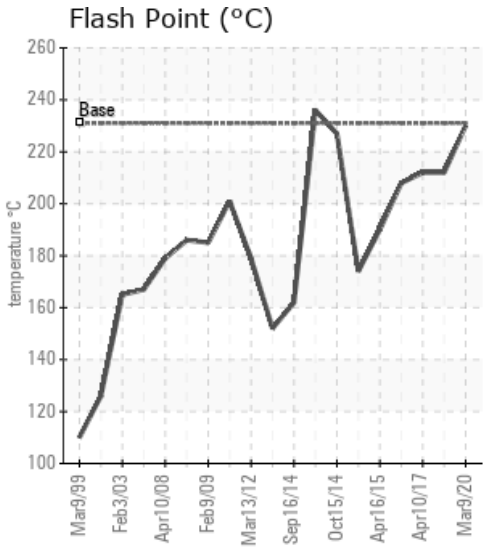
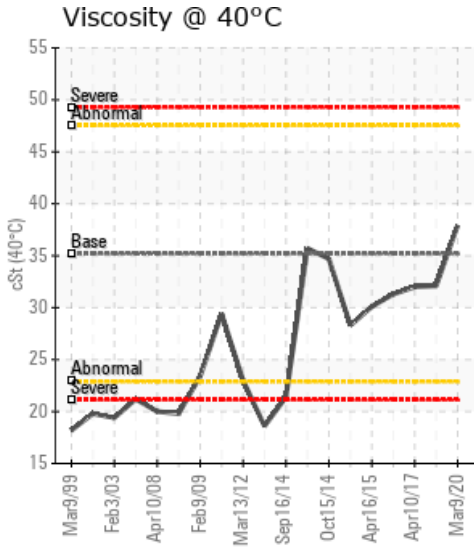
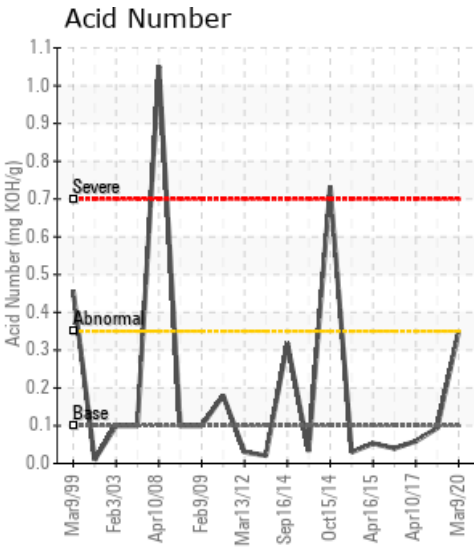
[CENOVUS PECO / 12-01-49-16W5] H810

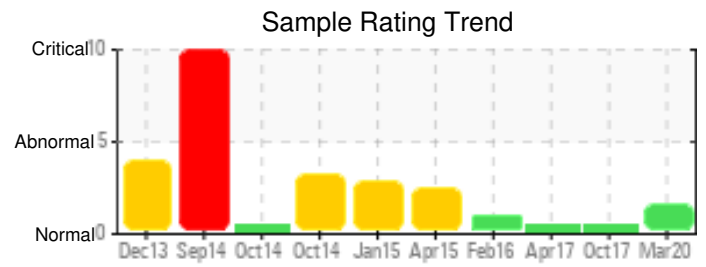
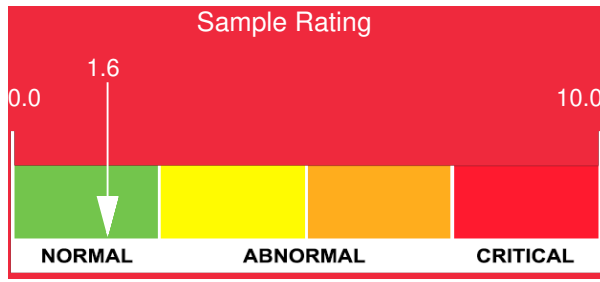
Customer: PTRHTF20039	System Information	Sample Information
BRENNTAG CANADA INC 3124-54TH AVENUE SE CALGARY, AB T2C 0A8 Canada Attn: Matthew Kryska Tel: E-Mail: mkryska@brenntag.ca	System Volume: 12000 ltr Bulk Operating Temp: 527F / 275C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: ALCO GAS & OIL	Lab No: 02347906 Analyst: Terry Veenstra Sample Date: 03/09/20 Received Date: 04/08/20 Completed: 04/27/20 Terry Veenstra terry.veenstra@petrocanadalsp.com

Recommendation: Pentane Insolubles are higher then normal. Final boiling point has been declining. Ensure gas blanket is in place and vent system as required to evacuate low boilers from system. Resample in 6 months.

Comments: Pentane Insolubles levels are severely high.

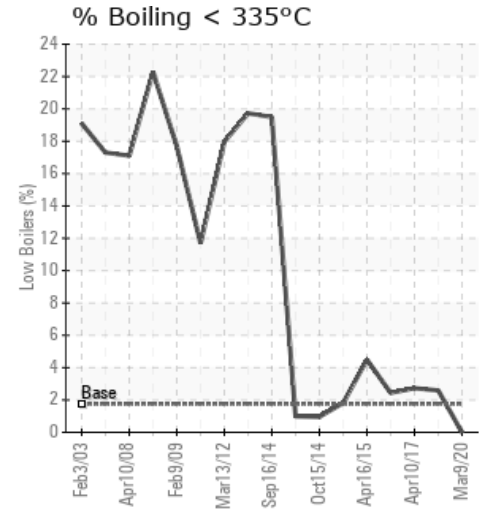
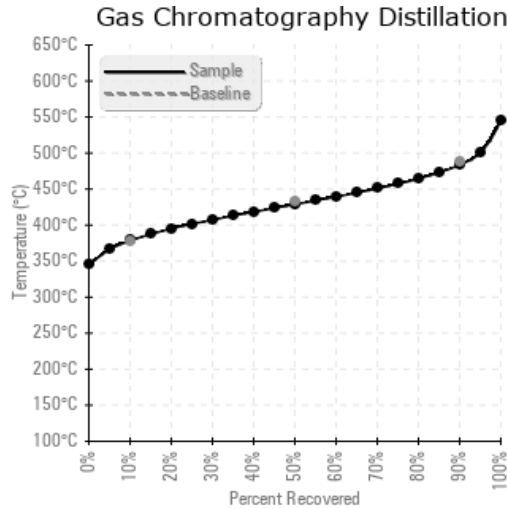
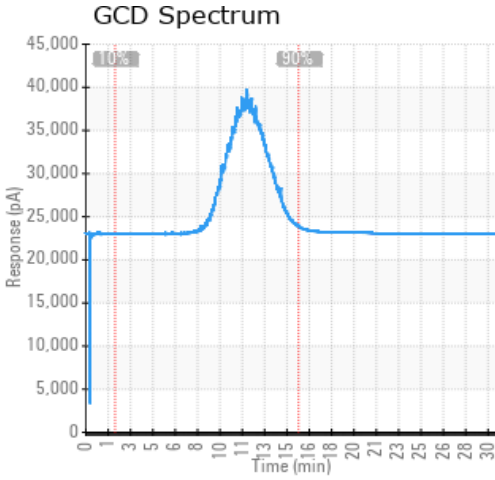
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/09/20	04/08/20	0h	PUMP DISCHARGE	446 / 230	9.4	37.9	0.35	0.895	713 / 378	804 / 429	902 / 484	0.00
10/04/17	10/18/17	3h		414 / 212	2.3	32.1	0.094	0.092	703 / 373	803 / 429	907 / 486	2.59
04/10/17	04/21/17	30h		414 / 212	2.6	32.0	0.059	0.066	702 / 372	805 / 429	908 / 487	2.73
02/24/16	03/07/16	0h	DOWNSTREAM OF PUMP	406 / 208	0.8	31.3	0.04	0.085	710 / 377	817 / 436	929 / 498	2.44
04/16/15	04/24/15	5h	PUMP DISCHARGE	374 / 190	4.4	30.1	0.053	0.010	688 / 364	799 / 426	905 / 485	4.49
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75





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
03/09/20	2	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0
10/04/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
04/10/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0
02/24/16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0
04/16/15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0
Baseline Data			0	0						0			0	0					0				280	

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



Historical Comments

10/04/17	This sample is in good shape and is OK for continued use. Resample in 12 months.
04/10/17	This fluid looks good and is suitable for further use. More information is required for any further interpretation.
02/24/16	The fluid is in good condition and suitable for further use. Flash Point and Percentage boil-off below 335 degrees C have improved compared with the previous sample. The 10% GCD temperature has increased close to fresh fluid. If venting is taking place as recommended earlier, keep doing this. A negative side effect of venting low boiler vapors to atmosphere is contact of hot fluid with outside air resulting in oxidation of the fluid. The 90% GCD temperature has increased as a result of this. Fluid degradation by oxidation can be limited by venting for a shorter duration but more frequently. Please resample in 12 months. (GCD) 90% Distillation Point is marginally high.
04/16/15	The fluid is in good condition and suitable for further use. Flash Point is slightly low. Percentage boil-off below 335 degrees C has increased. This in combination with a reduction in 10% GCD temperature indicates thermal degradation of the fluid. Monthly venting of low boiler vapors is recommended to maintain a healthy fluid condition. Please resample in 6 months. COC Flash Point is marginally low.