

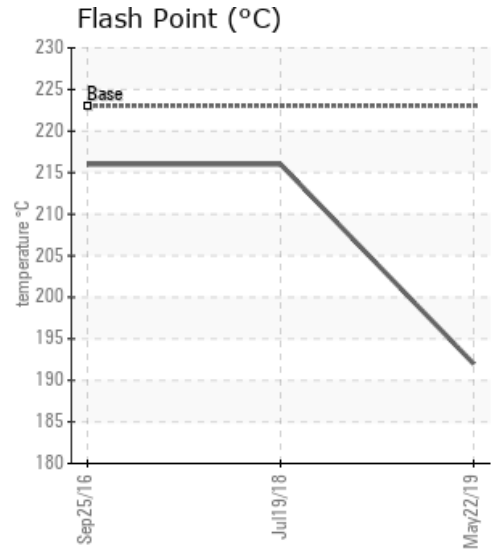
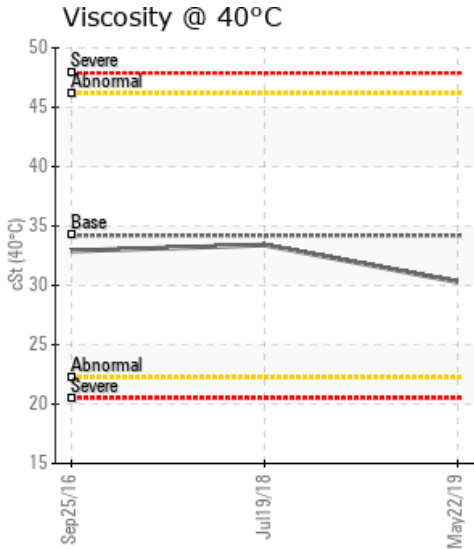
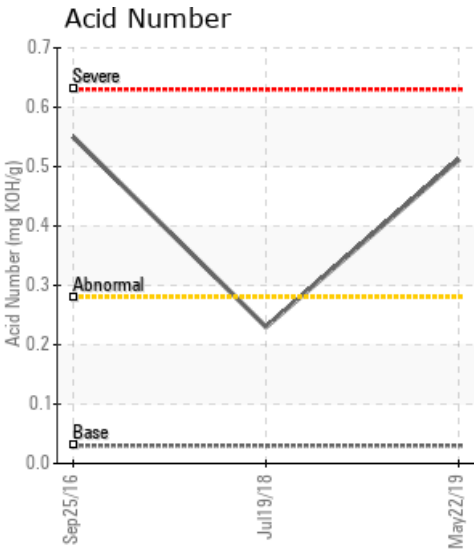
[11-17-55-21W5 / Oldman] 11-17-55-21W5 PLANT 3 DCUT H810

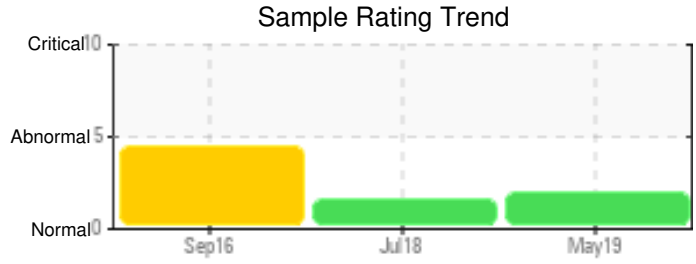
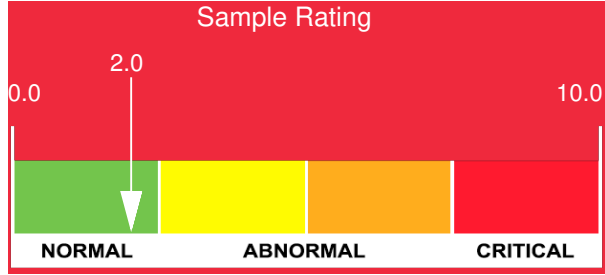
Customer: PTRHTF20124	System Information	Sample Information
PEYTO EXPLORATION BOX 7198 EDSON, AB T7E 1V4 Canada Attn: Brian Ford Tel: (780)712-0977 E-Mail: bford@peyto.com	System Volume: 26000 ltr Bulk Operating Temp: 383F / 195C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: PRESSON	Lab No: 02288391 Analyst: Peter Harteveld Sample Date: 05/22/19 Received Date: 05/31/19 Completed: 06/03/19

Recommendation: The fluid is in a reasonable condition and suitable for further use. Flash Point and 10% / 50% GCD temperatures are slightly low. This in combination with 4.14% low boiler vapor indicates thermal degradation. Please vent off the low boiler vapor to atmosphere. AN is elevated. Please re-sample in 6 months.

Comments: Acid Number (AN) is abnormally high. COC Flash Point is marginally low.

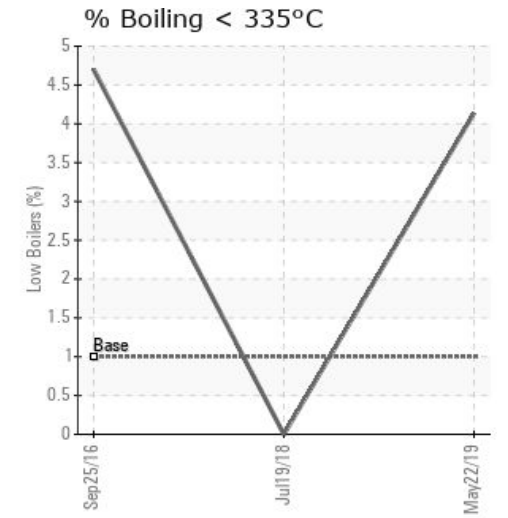
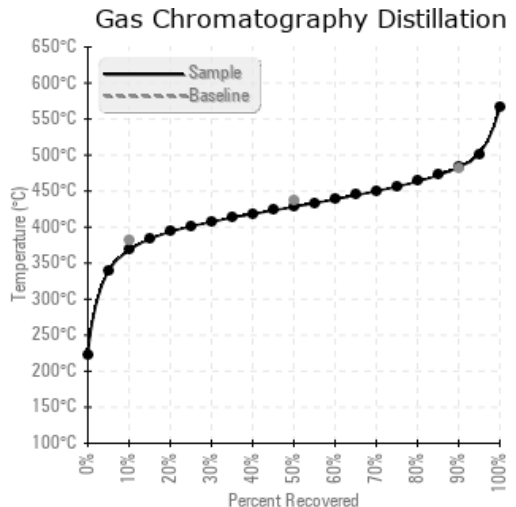
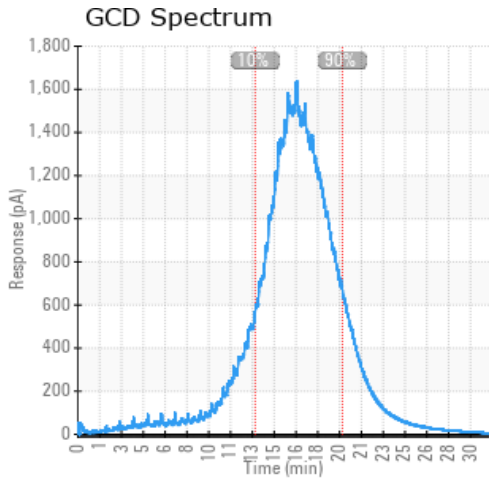
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/22/19	05/31/19	4y		378 / 192	13.7	30.3	0.512	0.232	694 / 368	803 / 428	901 / 483	4.14
07/19/18	08/08/18	3y	PUMP DISCHARGE	421 / 216	41.9	33.4	0.23	0.468	729 / 387	794 / 423	874 / 468	0.00
09/25/16	10/03/16	2y	TANK	421 / 216	822.1	32.9	0.550	0.388	689 / 365	798 / 425	883 / 473	4.70
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





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
05/22/19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/19/18	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/25/16	15	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	2	0	0	0	3	1
Baseline Data			0	0						0			0	0					0				0	

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



Historical Comments	
07/19/18	The fluid is in good condition and suitable for further use but the Pentane Insolubles (solids) content has increased. It is now just below the reportable limit of 0.5%. Therefore it is recommended to start filtration of the fluid. The 90% GCD temperature is slightly low but not a concern at this time. Please re-sample in 6 months. Pentane Insolubles levels are abnormally high. (GCD) 90% Distillation Point is marginally low.
09/25/16	The fluid contains too much water. TAN is high. Percentage boil-off (low boiler vapor) below 335 degrees C is elevated. Together with a decreased GCD 10% temperature this indicates thermal degradation of the fluid. It is recommended to boil-off the water by venting steam to atmosphere. This will also remove some of the low boiler vapor. Please re-sample after venting on a regular basis for a period of 3 months. Please list system volume and bulk fluid temperature when sending in the next sample. The fluid is suitable for further use. Water contamination levels are abnormally high. Water contamination levels are abnormally high.. ppm Water contamination levels are abnormally high. Acid Number (AN) is abnormally high.

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