

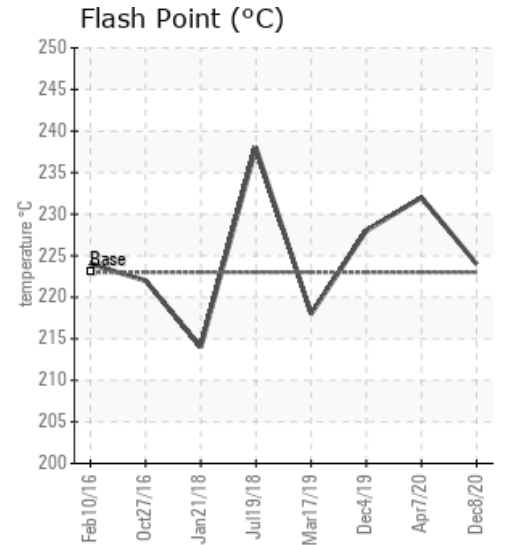
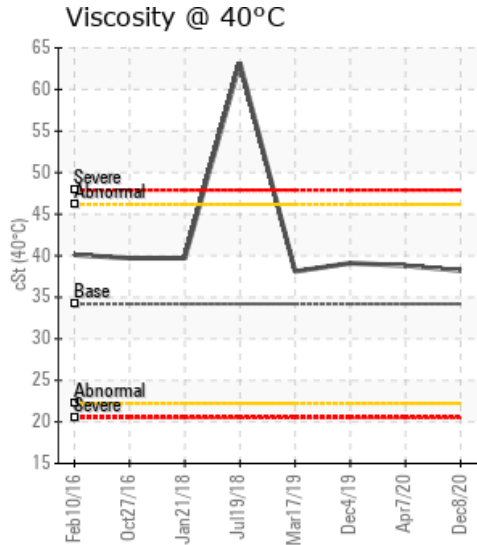
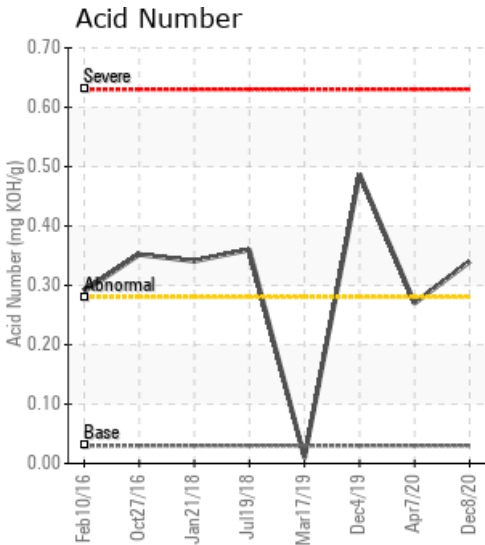
[11-21-55-20W5M] H-1210

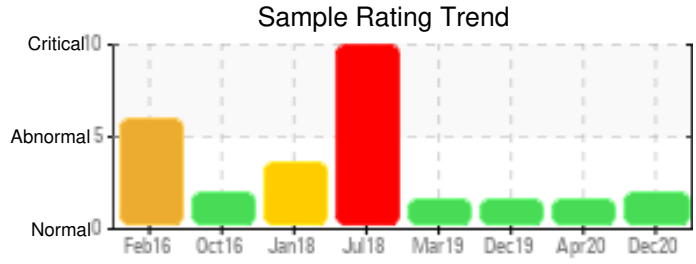
Customer: PTRHTF20228	System Information	Sample Information
PEYTO EXPLORATION Box 7198 EDSON, AB T7E 1V4 Canada Attn: Logan Pillage Tel: (780)712-9444 E-Mail: Lpillage@Peyto.com	System Volume: 27000 ltr Bulk Operating Temp: 320F / 160C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: ALCO	Lab No: 02392465 Analyst: Terry Veenstra Sample Date: 12/08/20 Received Date: 12/11/20 Completed: 12/16/20 Terry Veenstra terry.veenstra@petrocanadalsp.com

Recommendation: The Pentane insolubles is higher then normal however has improved since last sample. They TAN is higher then it was since last sample. Ensure gas blanket is in in good operating condition. Continue to operate and resample in 6 months.

Comments: Pentane Insolubles levels are abnormally high. Acid Number (AN) is abnormally high.

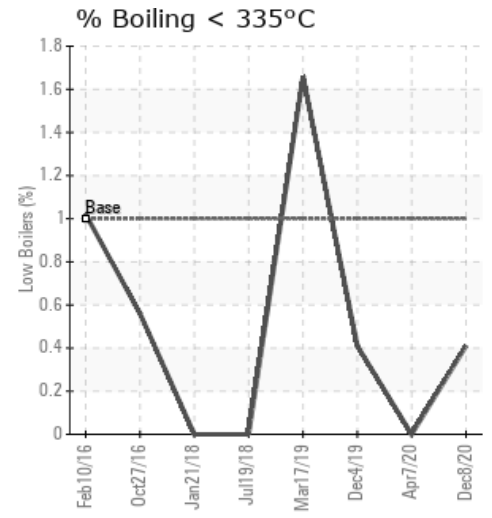
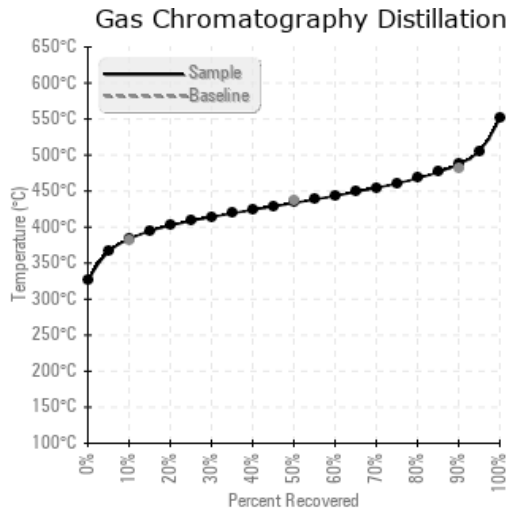
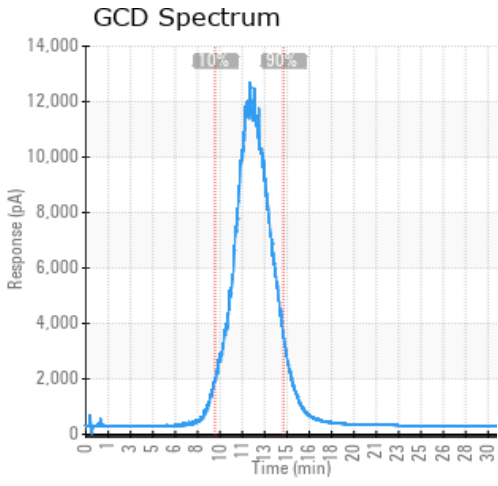
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/08/20	12/11/20	0y	Discharge of pump	435 / 224	9.7	38.2	0.34	0.490	722 / 383	812 / 434	909 / 487	0.41
04/07/20	04/14/20	0y		450 / 232	10.6	38.8	0.27	0.934	724 / 384	813 / 434	908 / 487	0.00
12/04/19	12/09/19	0y	DISCHARGE	442 / 228	25.9	39.1	0.487	0.723	716 / 380	808 / 431	908 / 487	0.41
03/17/19	03/18/19	0y	DISCHARGE OF THE PUM	424 / 218	12.5	38.1	0.01	1.11	702 / 372	798 / 426	896 / 480	1.66
07/19/18	08/08/18	2y	PUMP DISCHARGE	460 / 238	1507.7	63.2	0.36	1.20	717 / 381	799 / 426	890 / 477	0.00
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
12/08/20	31	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
04/07/20	35	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
12/04/19	36	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
03/17/19	31	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
07/19/18	375	0	0	0	0	0	0	0	0	0	4	11	0	0	0	0	4	0	0	0	3	0	1	2
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	
04/07/20	The fluid is in a good condition and suitable for further use. Despite the kidney loop filtration the solids content of the fluid has increased slightly. There is no indication in the analysis to explain this. It means it's either related to the repeatability/reproducibility of the test method or filtration is not efficient. Please ensure that filter elements are replaced before they reach high delta p to avoid rupture and/or solids carry-over. Please re-sample in 6 months. Pentane Insolubles levels are severely high.
12/04/19	The fluid is in a good condition and suitable for further use. AN is slightly high which has resulted in some corrosion to take place. (Fe)Pentane insolubles (solids) content has just exceeded the reportable limit of 0.5% with 0.7%. This is not a problem at this moment. System is equipped with kidney loop filtration which seems to work efficient. Next sample will show that better. Please resample in 6 months. Comment for Logan: it is not recommended to connect this system with system H-802 because the fluid of system H-802 would contaminate this Fluid resulting in a reduction of the remaining life of the Fluid. It would also foul system H-1210 Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high.
03/17/19	The fluid is in a good condition but the Pentane Insoluble (solids) content is high. It is recommended to start filtration of the fluid and re-sample when filtration is completed. Pentane Insolubles levels are severely high.
07/19/18	The fluid is in a poor condition. The water content is too high which has resulted in a high Fe content as a result of corrosion. Viscosity is high. The Pentane Insoluble (solids) content is double that of the reportable limit which is 0.5%. If this sample was not taken from a low drain point in the system and thus representative for the fill of the system, it is recommended to clean/flush the system and fill with fresh Petro-Therm.PQ levels are severe. Iron ppm levels are abnormal. Water contamination levels are severely high. Water contamination levels are severely high. ppm Water contamination levels are severely high. Pentane Insolubles levels are severely high. Visc @ 40°C is severely high. Acid Number (AN) is abnormally high.

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