

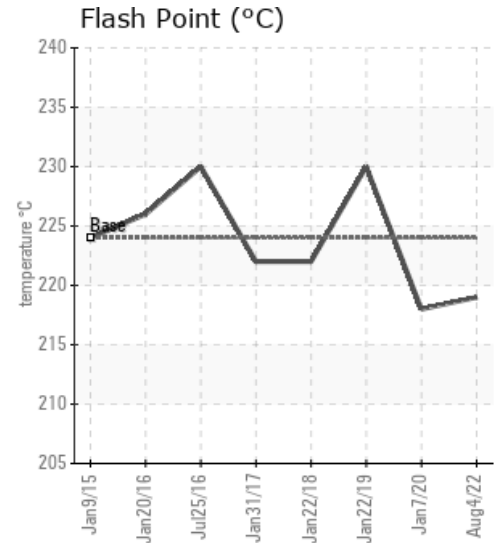
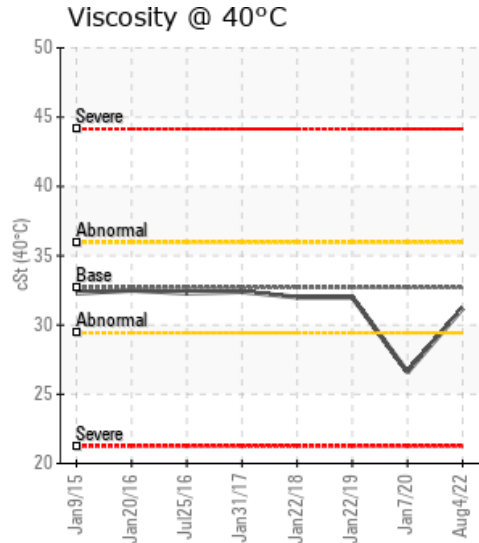
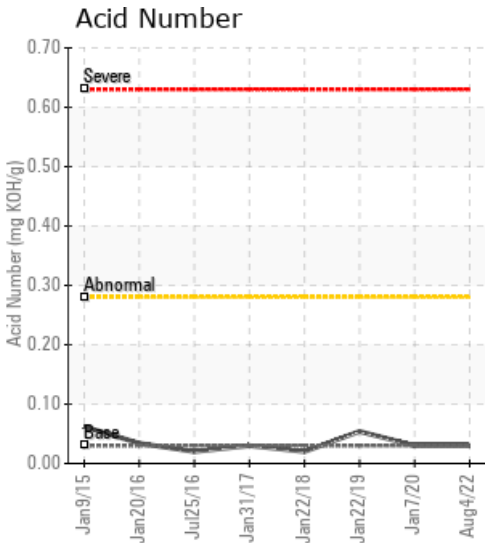
[PEMBINA KAKWA RIVER / LSD 8-13-63-5W6] PARAMOUNT PHASE #3 HEAT

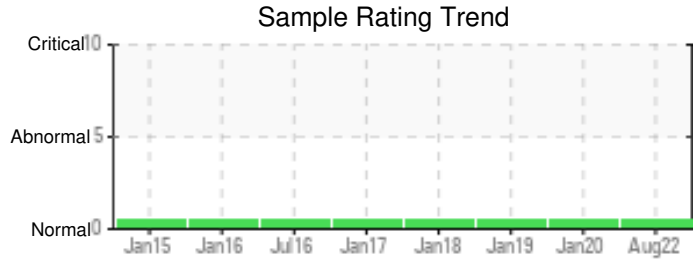
Customer: PTRHTF20062	System Information	Sample Information
Pembina Gas Services	System Volume: 60000 ltr	Lab No: 02516977
GRANDE PRAIRIE, AB T8V 7K2 Canada	Bulk Operating Temp: 149F / 65C	Analyst: Clinton Buhler
Attn: Dave Clark	Heating Source:	Sample Date: 08/04/22
Tel: (780)296-1578	Blanket:	Received Date: 10/18/22
E-Mail: dclark@pembina.com	Fluid: PETRO CANADA CALFLO AF	Completed: 10/21/22
	Make: HEATECH	Clinton Buhler
		Clinton.Buhler@HFSinclair.com

Recommendation: Sample results indicate the fluid is in suitable condition for continued service. Solids content has risen to 0.339%. This can be associated with fluid degradation or perhaps from drawing a sample without sufficient flushing of the sample valve and piping. Thermal and oxidative degradation appear to be at low levels so it seems unlikely that is the cause at this time. Please re-sample in 12 months and ensure sample valve is thoroughly purge prior to collecting sample.

Comments:

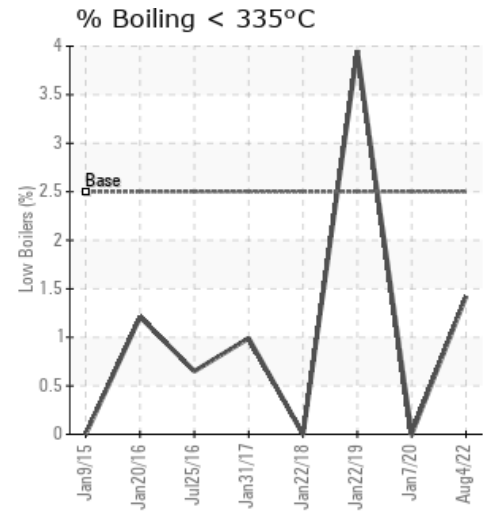
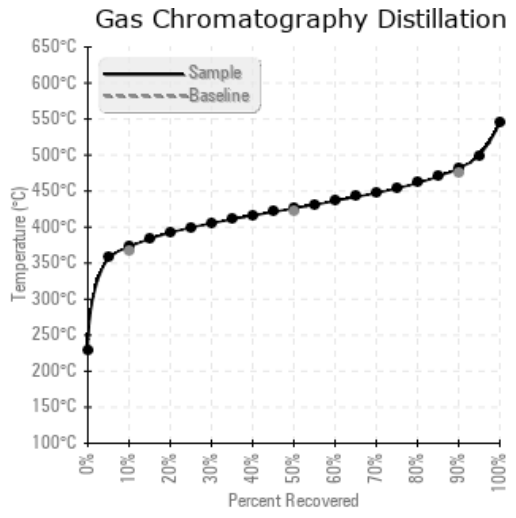
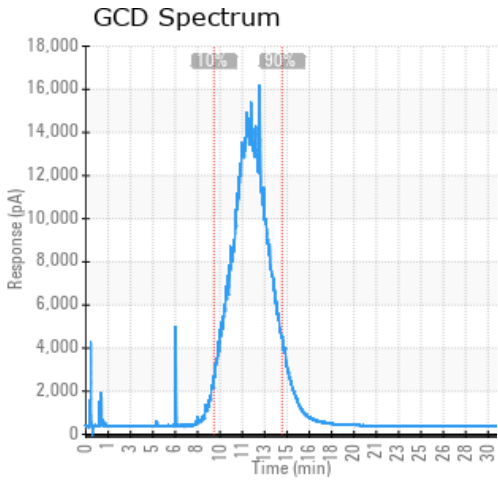
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
08/04/22	10/18/22	0.0y	FILTER POT LINE	426 / 219	9.2	31.2	0.03	0.339	703 / 373	799 / 426	899 / 482	1.42
01/07/20	02/03/20	4.0y	FILTER POT	424 / 218	0.00	26.6	0.030	0.029	709 / 376	791 / 421	885 / 474	0.00
01/22/19	02/04/19	4.0y	FILTER POT	446 / 230	18.6	32.0	0.054	0.066	666 / 352	767 / 409	876 / 469	3.95
01/22/18	01/29/18	3.0y		432 / 222	35.5	32.0	0.02	0.034	696 / 369	785 / 419	893 / 478	0.00
01/31/17	02/13/17	2.0y	PUMP DISCHARGE	432 / 222	0.6	32.4	0.03	0.009	699 / 371	797 / 425	902 / 483	0.99
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





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
08/04/22	1	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	30	0
01/07/20	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	1	0	0	0	29	0
01/22/19	14	0	0	0	0	0	0	0	0	0	5	10	0	0	0	0	0	0	0	0	2	0	251	0
01/22/18	13	0	0	0	0	0	0	0	0	0	5	9	0	0	0	0	0	0	0	0	2	0	272	0
01/31/17	14	0	0	0	0	0	0	0	0	0	4	9	0	0	0	0	0	0	0	0	4	0	273	0
Baseline Data			0	0						0			0	0					0				270	

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



Historical Comments

01/07/20	Sample results indicate that the fluid is suitable for continued service. Viscosity has reduced slightly. Please re-sample in 12 months
01/22/19	Sample results indicate that the fluid is suitable for continued service. Please re-sample in 12 months.
01/22/18	Sample results indicate that the fluid is suitable for continued service. Consider re-sampling in 12 months
01/31/17	Sample indicates that oil is in good condition and suitable for continued use. Resample in 6 months.

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