

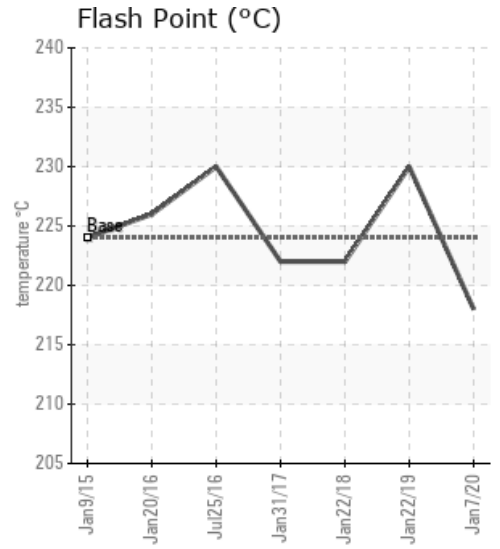
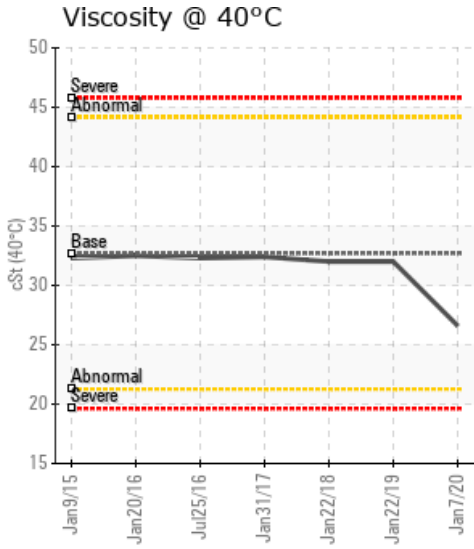
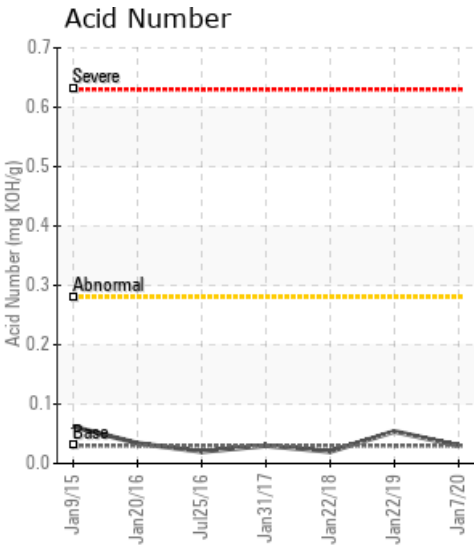
[PEMBINA KAKWA RIVER / LSD 8-13-63-5W6] PARAMOUNT PHASE #3 HEAT

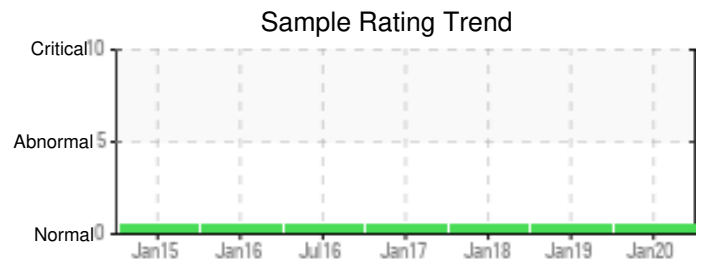
Customer: PTRHTF20062	System Information	Sample Information
Pembina Gas Services	System Volume: 60000 ltr	Lab No: 02335520
GRANDE PRAIRIE, AB T8V 7K2 Canada	Bulk Operating Temp: 149F / 65C	Analyst: Clinton Buhler
Attn: Nicolas Brooks	Heating Source:	Sample Date: 01/07/20
Tel: (403)874-8047	Blanket:	Received Date: 02/03/20
E-Mail: nbrooks@pembina.com	Fluid: PETRO CANADA CALFLO AF	Completed: 02/19/20
	Make: HEATECH	Clinton Buhler
		Clinton.Buhler@PetroCanadaLSP.com

Recommendation: Sample results indicate that the fluid is suitable for continued service. Viscosity has reduced slightly. Please re-sample in 12 months

Comments:

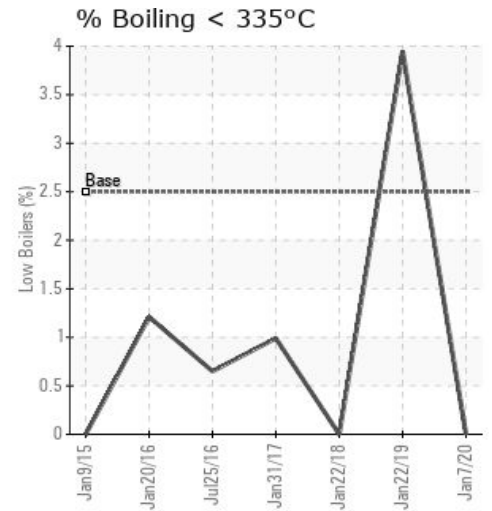
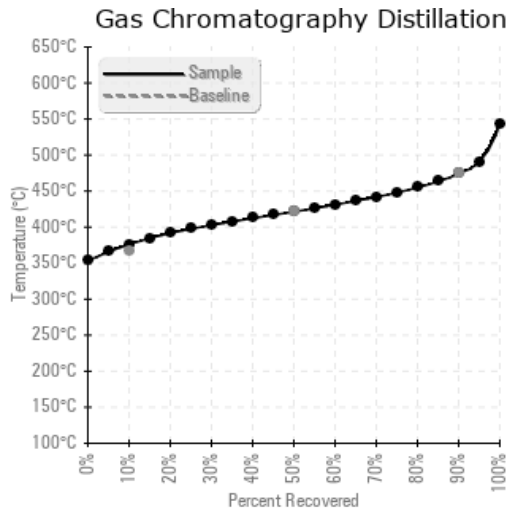
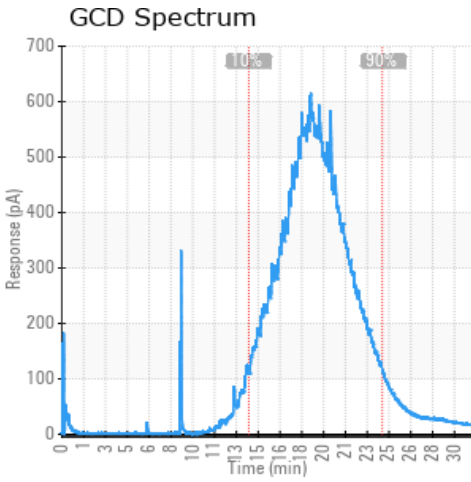
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/07/20	02/03/20	4y	FILTER POT	424 / 218	0.00	26.6	0.030	0.029	709 / 376	791 / 421	885 / 474	0.00
01/22/19	02/04/19	4y	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	3y		432 / 222	35.5	32.0	0.02	0.034	696 / 369	785 / 419	893 / 478	0.00
01/31/17	02/13/17	2y	PUMP DISCHARGE	432 / 222	0.6	32.4	0.03	0.009	699 / 371	797 / 425	902 / 483	0.99
07/25/16	07/28/16	2y	PUMP DISCHARGE	446 / 230	345.1	32.3	0.02	0.013	700 / 371	797 / 425	902 / 484	0.65
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
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
07/25/16	12	0	0	0	0	0	0	0	0	0	4	6	1	0	0	0	0	0	0	0	3	0	281	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	
01/22/19	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.
07/25/16	The fluid is in good condition but the water content has increased. The reported operating temperature of 65 degrees C (is very low !) may result in some condensation taking place. If the water content increases further, please boil-off the water. At the moment this water content is not a problem. The fluid is suitable for further use. Please re-sample in 6 months.

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