

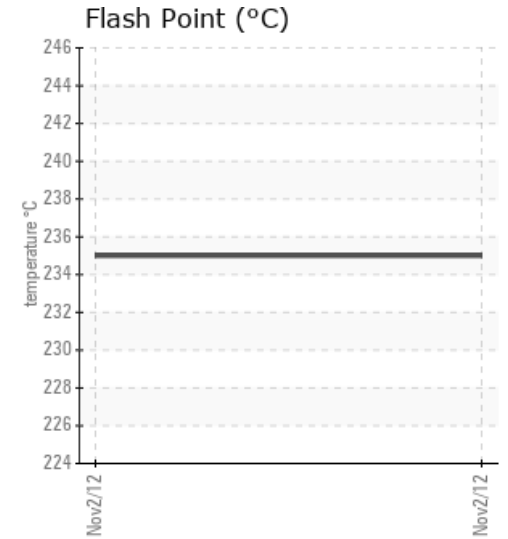
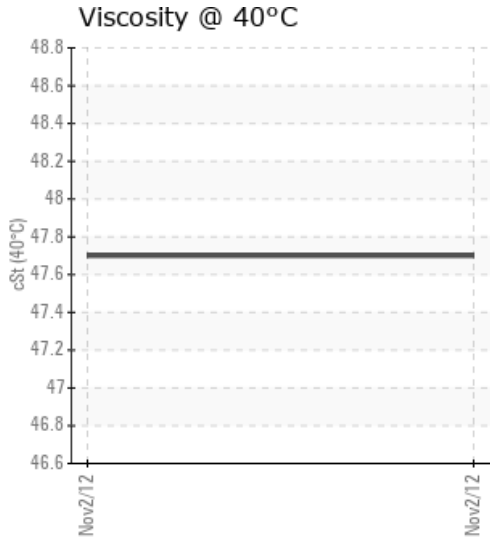
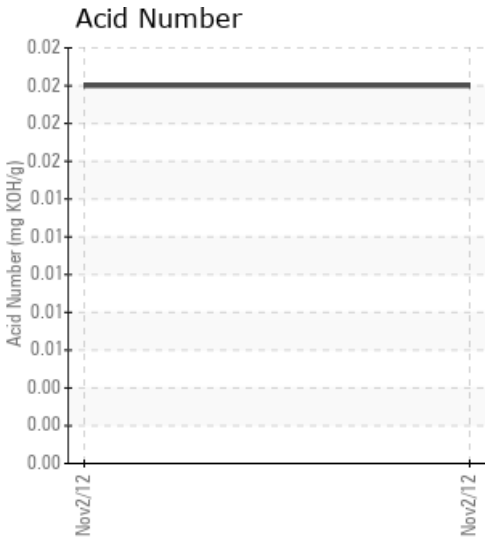
BISTCHO LAKE

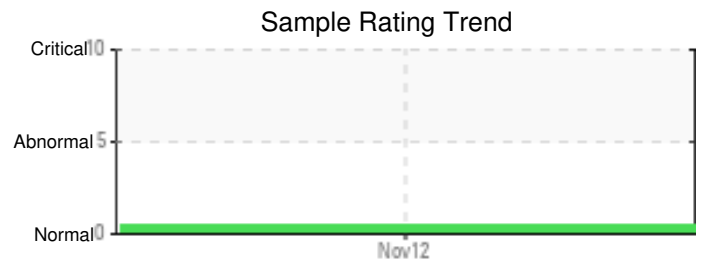
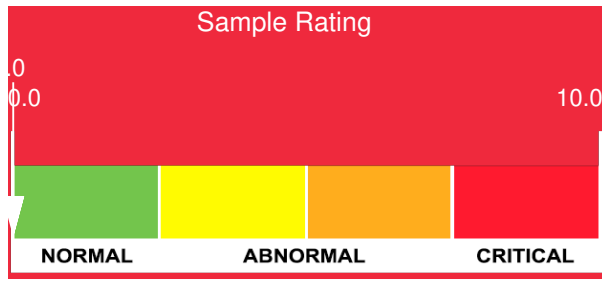
Customer: PTRHTF20062	System Information	Sample Information
Pembina Gas Services	System Volume: 5330 ltr	Lab No: E-211150
GRANDE PRAIRIE, AB T8V 7K2 Canada	Bulk Operating Temp: 160F / 71C	Analyst: Gaston Arseneault
Attn: Nicolas Brooks	Heating Source:	Sample Date: 11/02/12
Tel: (403)874-8047	Blanket:	Received Date: 11/08/12
E-Mail: nbrooks@pembina.com	Fluid:	Completed: 11/14/12
	Make:	Gaston Arseneault
		gaston.arseneault@hollyfrontier.com

Recommendation: The oil viscosity rose since the last sample in Jan 2011 which is strange because fresh Petro-Therm is well below the viscosity the oil was back then. Besides the addition of a heavier oil, degradation by oxidation can also increase the viscosity of the

Comments: Viscosity is SIGNIFICANTLY HIGH; Simulated distillation 10% boiling point is moderately high. Simulated distillation 90% boiling point is moderately 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	%
11/02/12	11/08/12	5.0h	5 WAY MANIFOLD OFF D	455 / 235	3	47.7	0.02	0.044	751 / 400	843 / 451	925 / 496	0.099
Baseline Data												

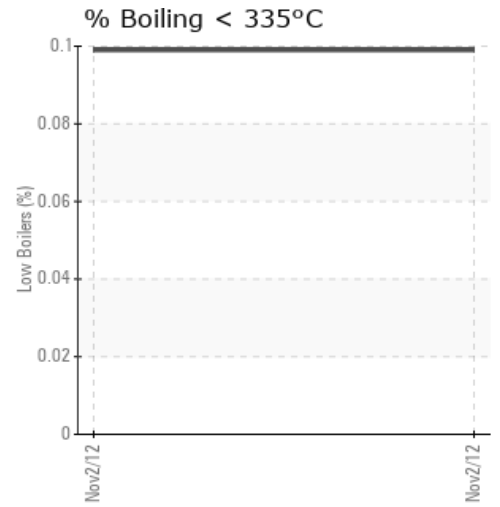
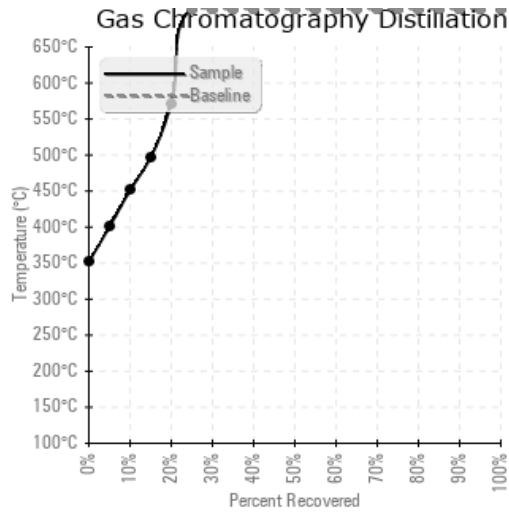




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
11/02/12	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data																								

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

GCD Spectrum



Historical Comments	

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