

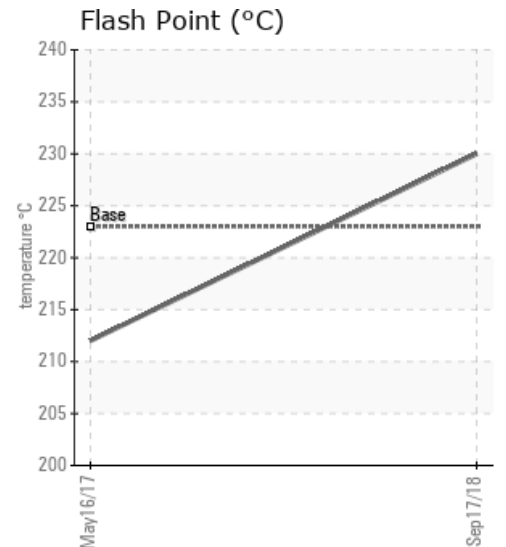
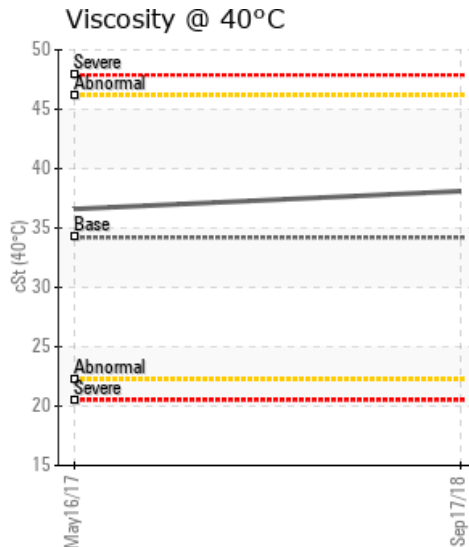
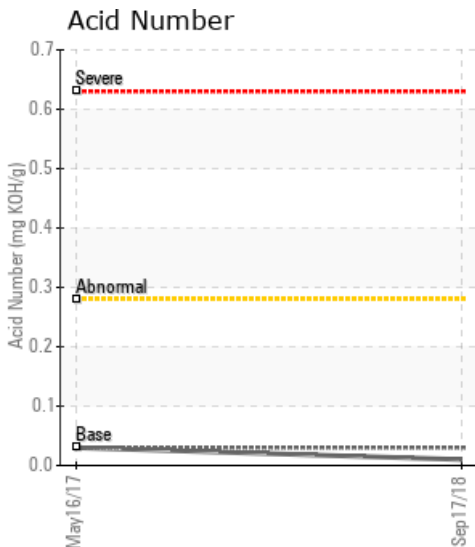
VOPAK K-4

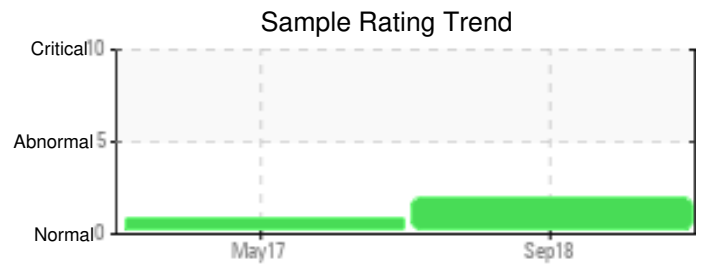
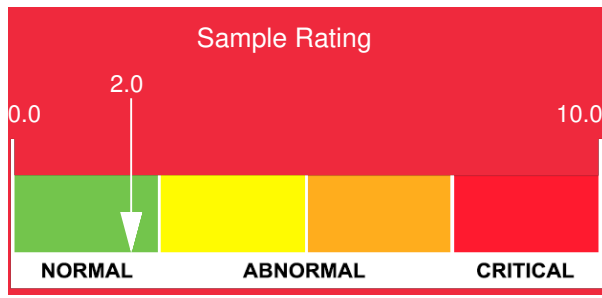
Customer: PTRHTF30102	System Information	Sample Information
Bitumar Inc. 11155 boul Ste-Catherine Est Montreal-Est, QC H1B 0A4 Canada Attn: Michel Lauzon Tel: E-Mail: Michel.Lauzon@bitumar.com	System Volume: 10000 ltr Bulk Operating Temp: 400F / 204C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02249319 Analyst: Pierre Castagne Sample Date: 09/17/18 Received Date: 11/05/18 Completed: 11/09/18

Recommendation: Les fractions lourdes (GCD @90%) sont très élevée. Les fractions lourdes, augmente la viscosité, favorise les dépôts de carbone

Comments: (GCD) 90% Distillation Point is severely high.

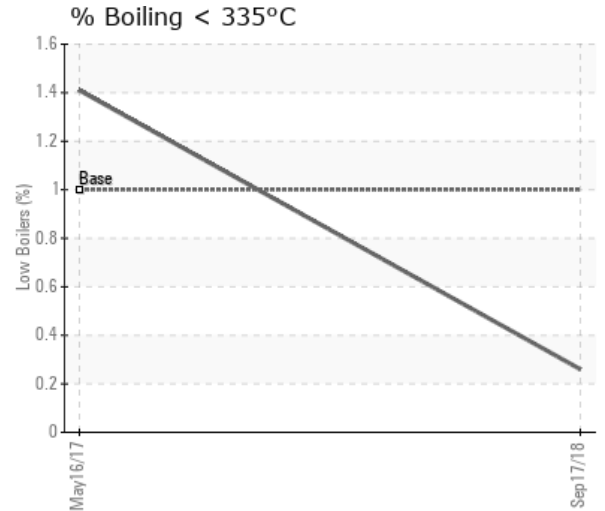
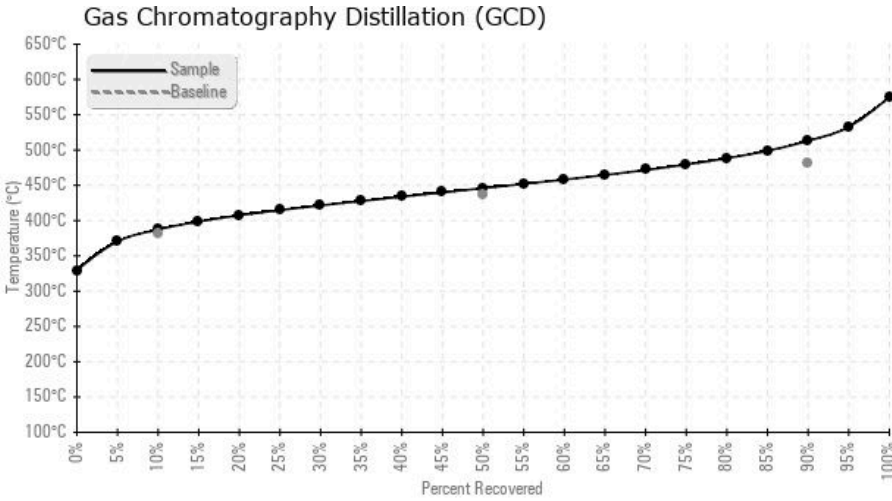
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/17/18	11/05/18	0y		446 / 230	259.0	38.1	0.01	0.115	729 / 387	835 / 446	956 / 513	0.26
05/16/17	05/18/17	0y	MAIN STORAGE TANK	414 / 212	197.6	36.6	0.03	0.058	717 / 381	822 / 439	938 / 504	1.41
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
09/17/18	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/16/17	13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	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	
05/16/17	On remarque une présence d'asphalte (Vanadium 3.8), les fractions lourdes (GCD @90%) sont élevées, ceux-ci augmentent la viscosité et favorise la formation de carbone. On remarque un début du craquage du fluide caloporteur.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.