

[KEYERA PARTNERSHIP / 3-12-46-14W5M] TOTE C

Customer: PTRHTF30084
 Keyera Partnership Brazeau River Ga...
 Box 7318
 Drayton Valley, AB T7A 1S5 Canada
 Attn: Don Renner
 Tel: (780)894-3601
 E-Mail: don_renner@keyera.com

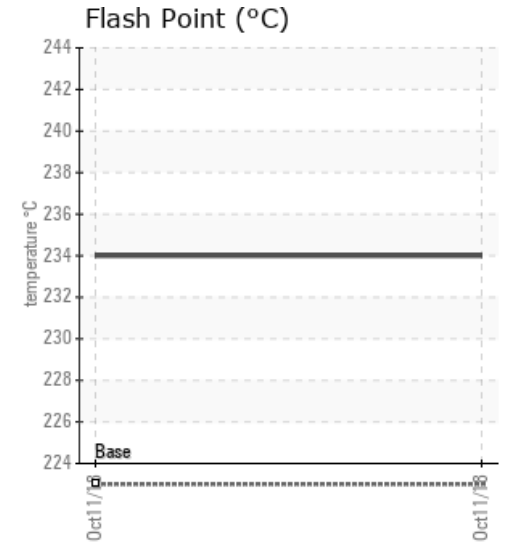
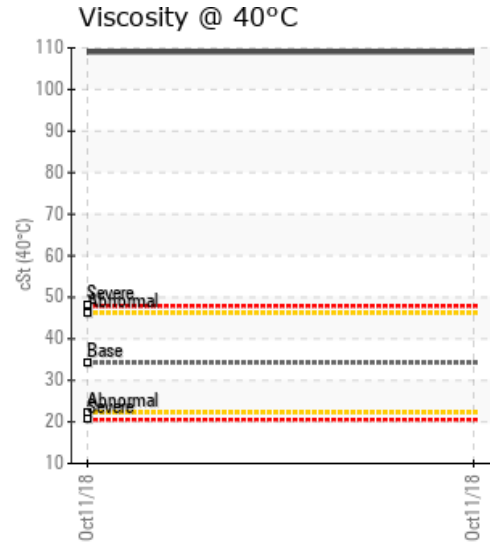
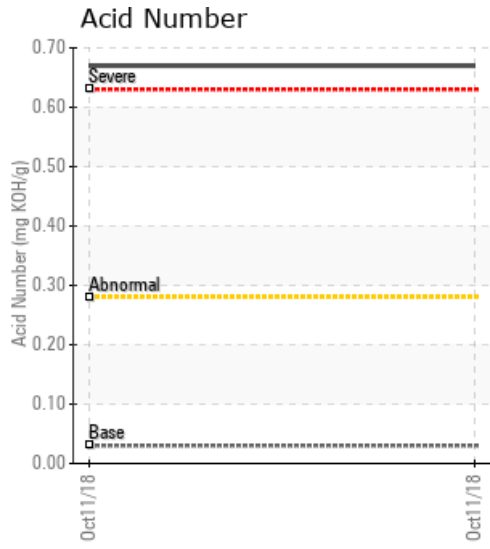
System Information
 System Volume: 0 ltr
 Bulk Operating Temp: Not Specified
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make:

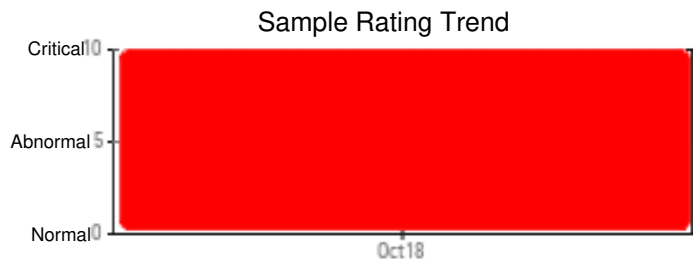
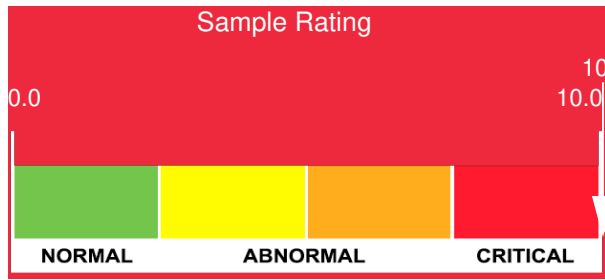
Sample Information
 Lab No: 02245902
 Analyst: Kevin McDermott
 Sample Date: 10/11/18
 Received Date: 10/18/18
 Completed: 10/22/18
 Kevin McDermott
 kevin.mcdermott@hollyfrontier.com

Recommendation: Fluid is not suitable for use and should be disposed of - suspected contamination.

Comments: Water contamination levels are marginally high. Acid Number (AN) is severely high. (GCD) 10% Distillation Point is severely high. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Zinc ppm levels are severely high. Calcium ppm levels are severely high. Visc @ 40°C is severely high. Barium, phosphorus and sulfur ppm levels are 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	%
10/11/18	10/18/18	0.0y		453 / 234	406.9	109	0.67	0.065	839 / 448	913 / 490	998 / 537	4.08
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

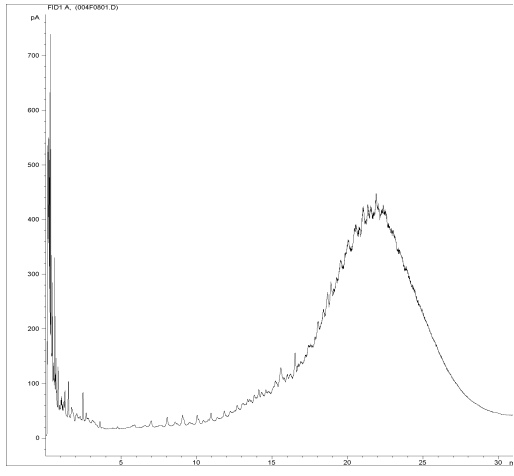




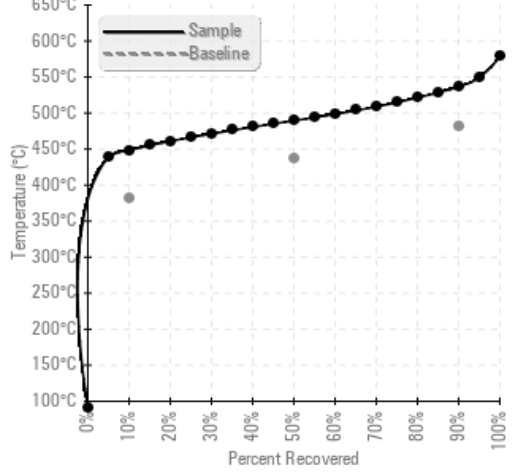
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
10/11/18	24	0	0	2	2	1	0	0	0	0	3	1	12	0	11	0	0	0	3	1	102	23	536	136
Baseline Data			0	0						0			0	0					0				0	

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

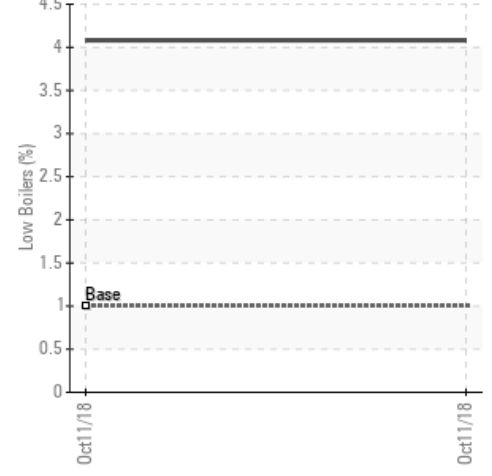
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

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.