

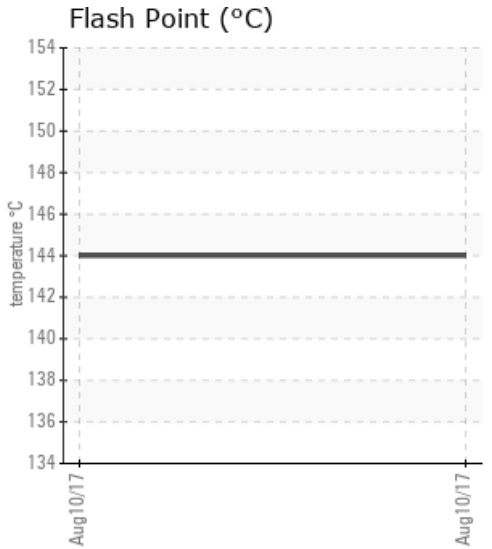
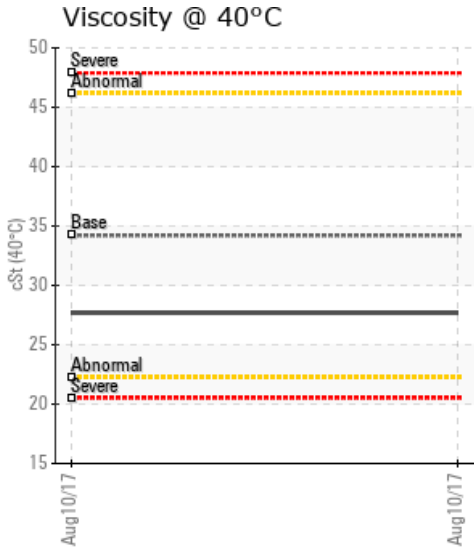
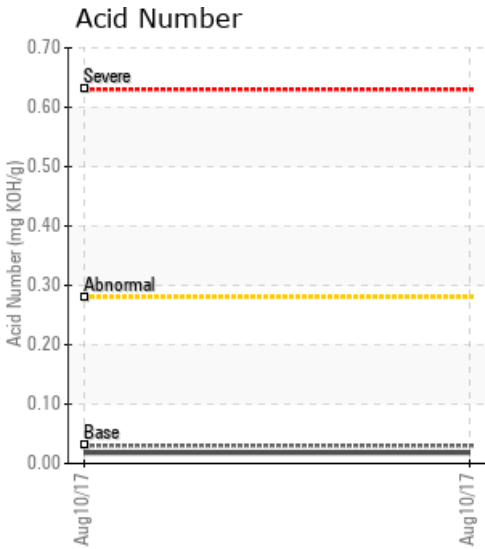
## [KEYERA PARTNERSHIP / 3-12-46-14W5] PLANT 2

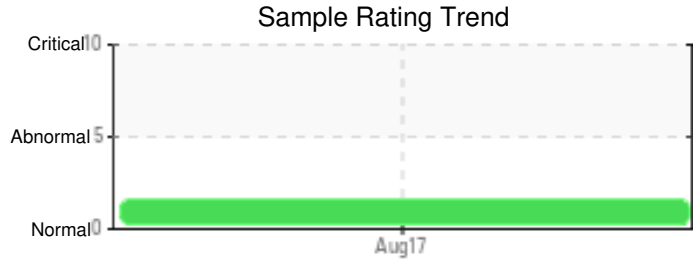
Customer: PTRHTF30084	System Information	Sample Information
Keyera Partnership Brazeau River Ga... Box 7318 Drayton Valley, AB T7A 1S5 Canada Attn: Don Renner Tel: (780)894-3601 E-Mail: don_renner@keyera.com	System Volume: 14000 ltr Bulk Operating Temp: 455F / 235C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: PETROTHERM ENG.	Lab No: 02165139 Analyst: Kevin McDermott Sample Date: 08/10/17 Received Date: 08/22/17 Completed: 08/25/17 Kevin McDermott kevin.mcdermott@hollyfrontier.com

Recommendation: Reduced flash point and viscosity indicate that some thermal cracking of the fluid has taken place, which is caused by excessive skin film temperature at the heat source. However, fluid remains in good condition. Suggest annual sample submissions.

Comments: COC Flash Point is severely low. Viscosity slightly low.

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	%
08/10/17	08/22/17	2.0y	AT THE PUMP	291 / 144	16.9	27.7	0.018	0.027	689 / 365	801 / 427	903 / 484	4.43
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

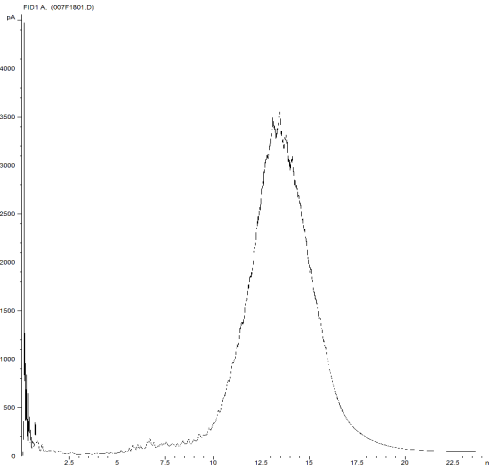




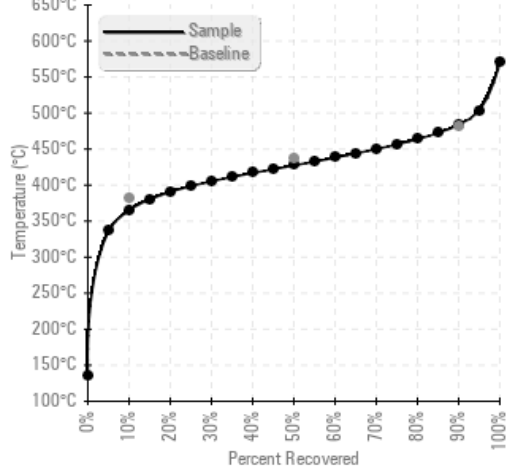
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
08/10/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Baseline Data</b>			0	0						0			0	0					0				0	

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

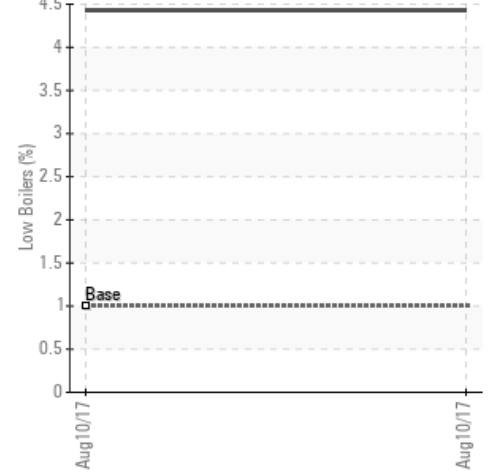
#### GCD Spectrum



#### Gas Chromatography Distillation



#### % Boiling < 335°C



### Historical Comments


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