

[KEYERA BRAZEAU RIVER GAS PLANT / 3-12-46-14W5] PLANT 1

Customer: PTRHTF30084
 Keyera Partnership Brazeau River Ga...
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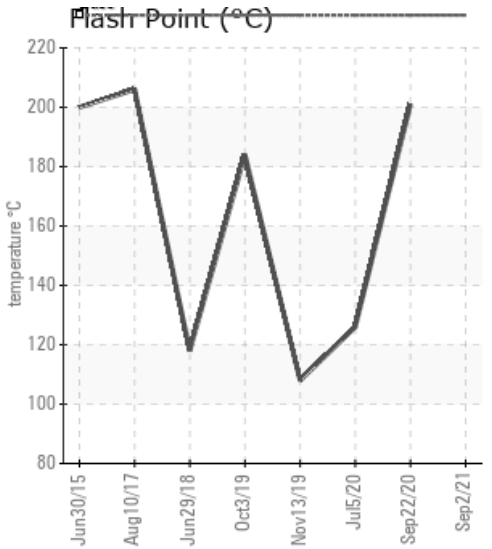
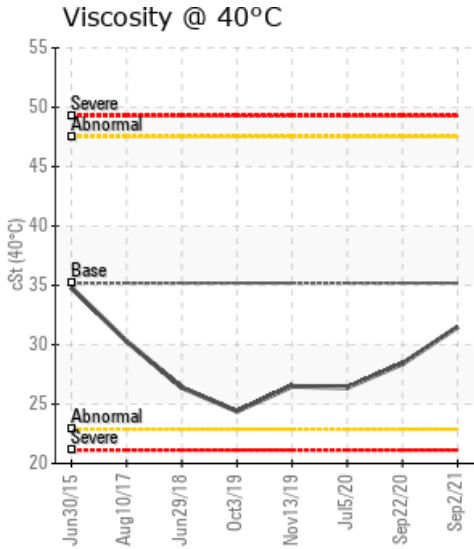
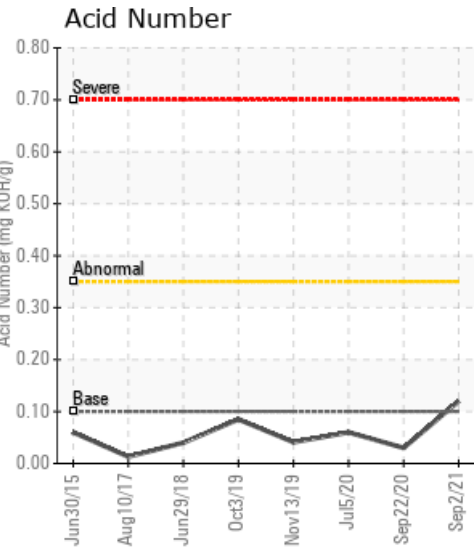
System Information
 System Volume: 14000 ltr
 Bulk Operating Temp: 446F / 230C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA CALFLO HTF
 Make: IAP HEATER

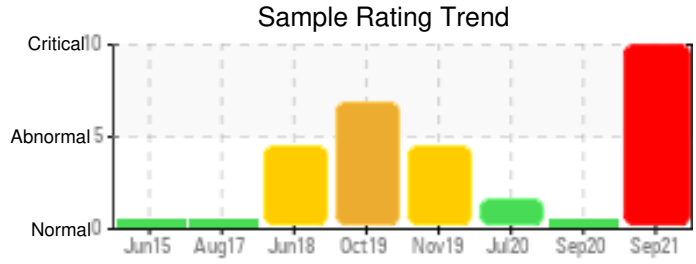
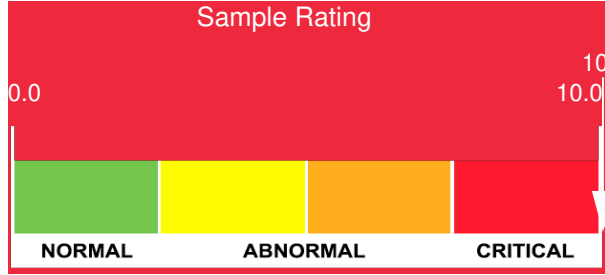
Sample Information
 Lab No: 02445067
 Analyst: Lyle Dach
 Sample Date: 09/02/21
 Received Date: 09/20/21
 Completed: 10/12/21
 Lyle Dach
 lyle.dach@hollyfrontier.com

Recommendation: NOTE: GCD results are skewed by the high water content. Sample was collected at an improper location, Keyera has collected a new sample waiting for results.

Comments: Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. Pentane Insolubles levels are abnormally high. (GCD) % < 335°C is severely high. (GCD) 10% Distillation Point is severely low. (GCD) 50% Distillation Point is severely low. (GCD) 90% Distillation Point is severely low. Boron ppm levels are abnormally high.

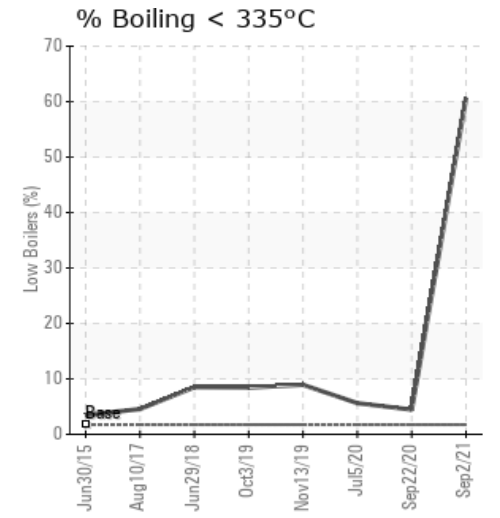
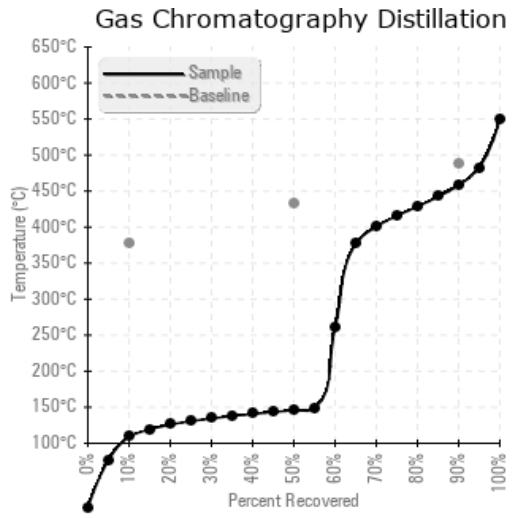
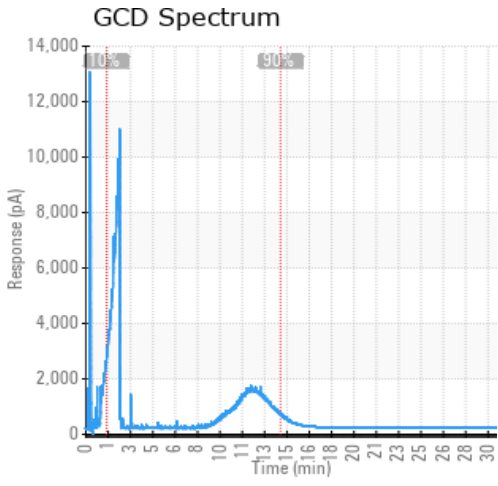
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/02/21	09/20/21	14.0w			43438.9	31.5	0.12	0.416	229 / 109	294 / 146	856 / 458	60.62
09/02/21	09/20/21	14.0w			1020.7	36.4						
09/22/20	09/29/20	0.0w	Slip stream filter	394 / 201	19.0	28.4	0.03	0.063	699 / 371	810 / 432	911 / 489	4.45
07/05/20	07/14/20	5.0w	SLIPSTREAM FILTER	259 / 126	40.4	26.4	0.06	0.032	689 / 365	806 / 430	905 / 485	5.62
11/13/19	11/20/19	0.0w	HOT/COLD 100P	226 / 108	18.1	26.5	0.041	0.116	642 / 339	778 / 415	882 / 472	8.93
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75





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
09/02/21	14	0	0	0	0	0	0	0	0	0	1	4	18	0	0	0	0	0	29	0	0	0	58	0
09/02/21	64	0	0	0	0	0	1	0	0	0	2	6	16	0	0	0	0	0	21	0	2	0	63	0
09/22/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/05/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/13/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0				0	0				280	

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



Historical Comments	
09/02/21	We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. Lubritest recommends using HTTFL sample kits for heat transfer fluids. Please contact us at 1-800-268-2131 and provide a purchase order for \$245 + HST in order to conduct additional testing (boiling points @ 10%, 50%, and 90%, percent boiling < 335°C, and solids) to determine the suitability for continued use. Please contact your representative for information regarding the proper sampling kits for your service. (not applicable) There is a high concentration of water present in the fluid. (not applicable)
09/22/20	Fluid in very good condition overall with very little change from the previous sample in July other than the flash point looks much better - likely from venting of the surge tank or partial fluid changeout.
07/05/20	Fluid remains in good condition overall with very little change from the previous sample in Nov 2019. The viscosity is slightly low and the flash point is really low. Given the history these low values are likely from a previous exchanger leak. COC Flash Point is severely low.
11/13/19	Nice to see absence of water that we saw in the Oct 30 sample. Must have been a bad sample. Suggest submitting annual samples - sooner if fluid gets exposed to stressed condition or exchange leak is suspected. Water content seen in previous sample is resolved. Flash point is very low, GCD 10% & viscosity also low. Likely from previous thermal cracking and/or exchanger leak. However these valve are all very similar to sample from July 2018.

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