

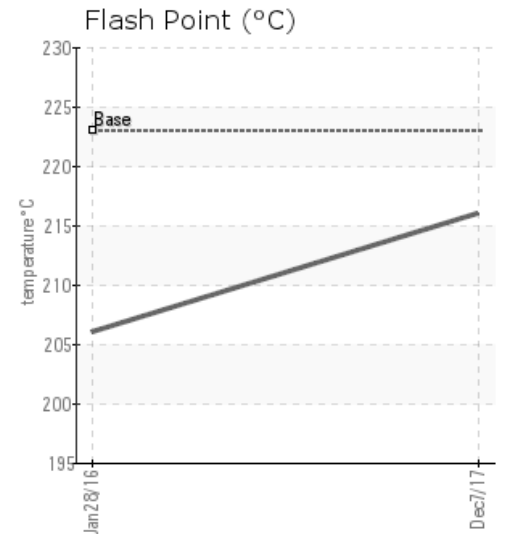
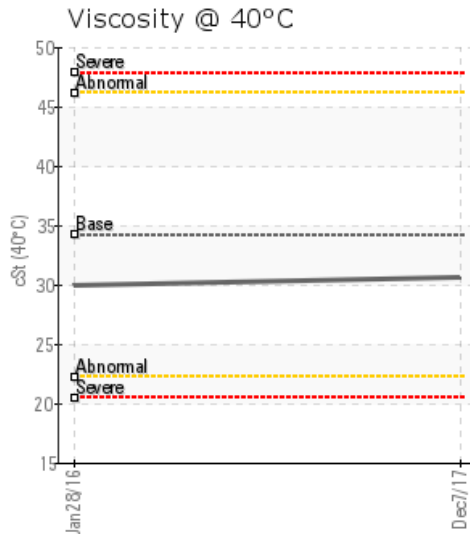
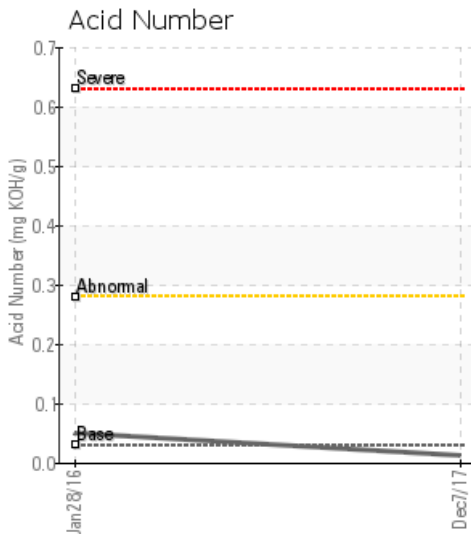
[PROGRESS ENERGY / LSD#B-88-I/94-B-1] S059300 HEAT MEDIUM

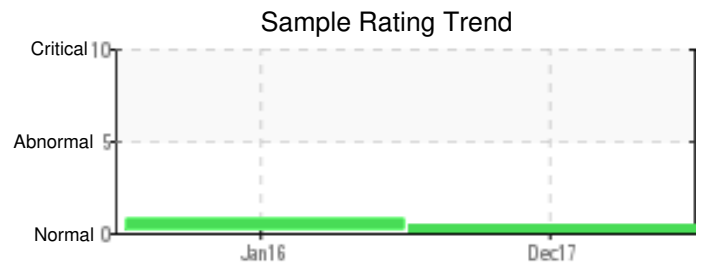
Customer: PTRHTF20039	System Information	Sample Information
BRENNTAG CANADA INC 3124-54TH AVENUE SE CALGARY, AB T2A 0A8 CANADA Attn: Jim Trockstad Tel: E-Mail: jtrockstad@brenntag.ca	System Volume: 22000 ltr Bulk Operating Temp: 367F / 186C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: PROPAK	Lab No: 02188564 Analyst: Clinton Buhler Sample Date: 12/07/17 Received Date: 12/15/17 Completed: 01/05/18 To discuss this report contact Clinton Buhler at 780-516-9920

Recommendation: Sample results indicate that the heat transfer fluid is suitable for continued service. Slightly reduced viscosity and slightly reduced GCD temperatures can possibly indicate the onset of minimal amounts of thermal degradation or contamination with another fluid or excessive blanket gas pressure (from the heat transfer fluid standpoint, a blanket gas pressure of 2-3 psi is optimal). Continue to monitor system operation. Re-sample in 12 months.

Comments:

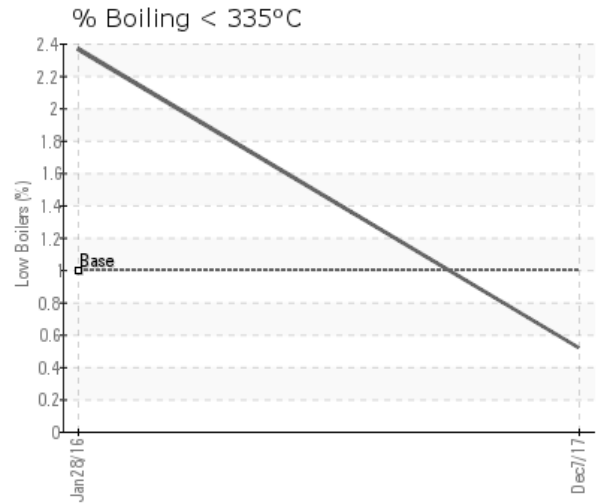
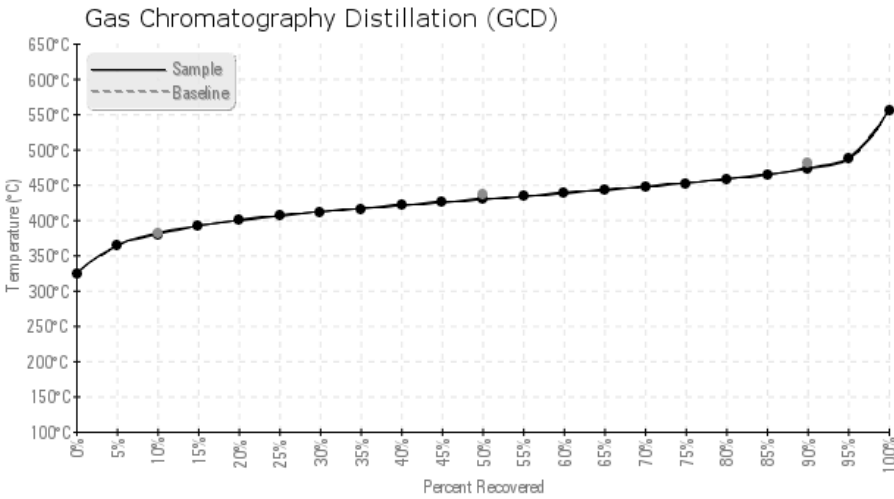
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/07/17	12/15/17	2y		421 / 216	0.00	30.6	0.013	0.194	717 / 380	805 / 429	883 / 473	0.52
01/28/16	02/16/16	6y	RETURN LINE	403 / 206	65.9	29.9	0.05	0.149	715 / 379	820 / 438	933 / 501	2.37
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
12/07/17	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
01/28/16	4	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0
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

01/28/16	(GCD) 90% Distillation Point is high. No history or other information makes this sample difficult to give trend analysis. (GCD) 90% Distillation Point is abnormally high.
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