

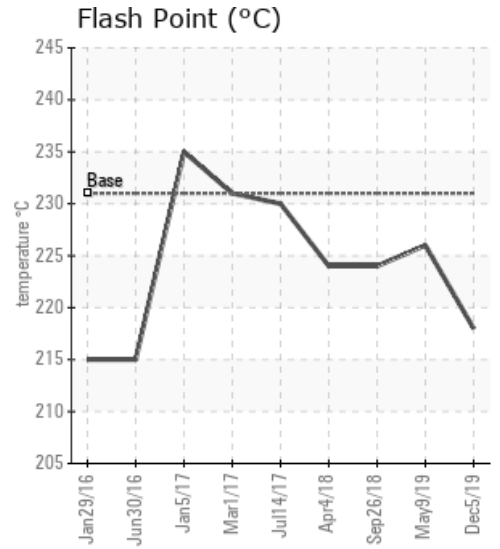
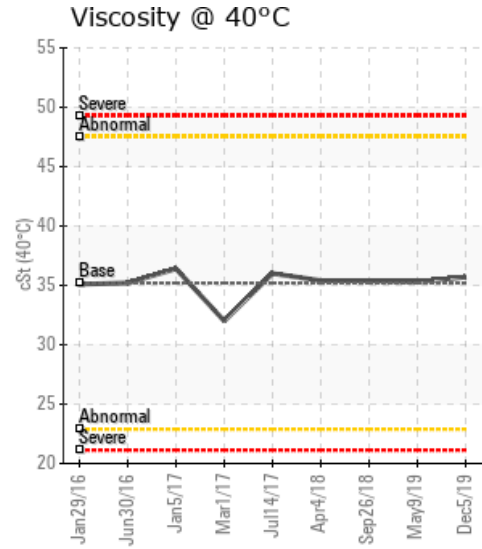
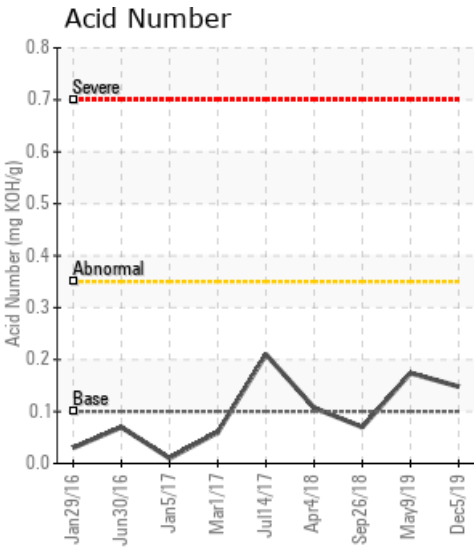
## LN01 Filled Sealdown Hot Oil System

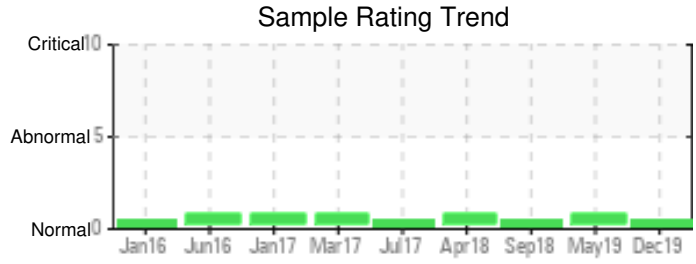
Customer: PTRHTF10141	System Information	Sample Information
TAMKO BUILDING PRODUCTS 2300 35TH ST TUSCALOOSA, AL 35401 USA Attn: Greg Colburn Tel: (205)752-3555 E-Mail: gregory_colburn@tamko.com	System Volume: 110 gal Bulk Operating Temp: 425F / 218C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: Heat Exchanger And T	Lab No: 02326905 Analyst: Jake Finn Sample Date: 12/05/19 Received Date: 12/13/19 Completed: 12/24/19

Recommendation: Oil is suitable for continued use. Remember to please include the time on oil when submitting oil samples for evaluation. Oil can be sent in for testing in one year.

Comments: N/A

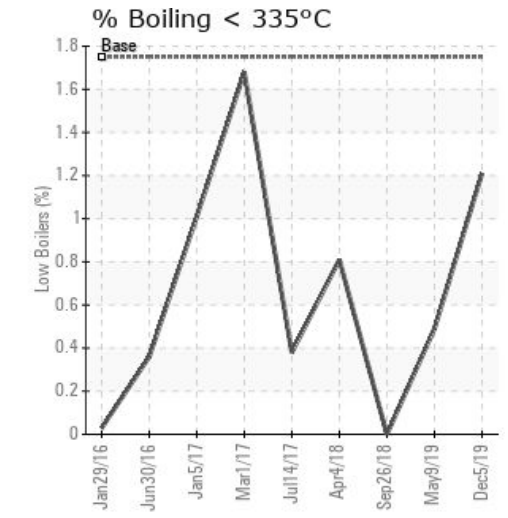
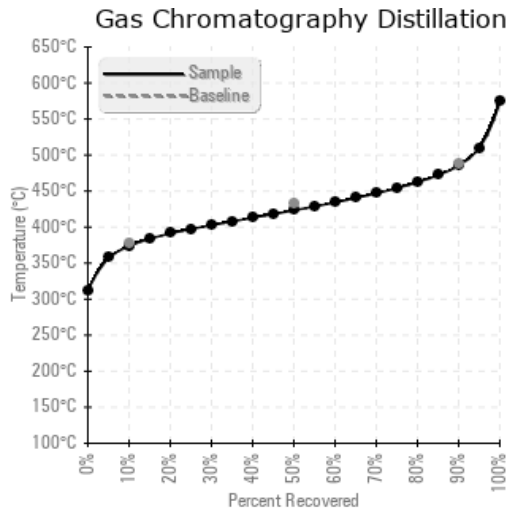
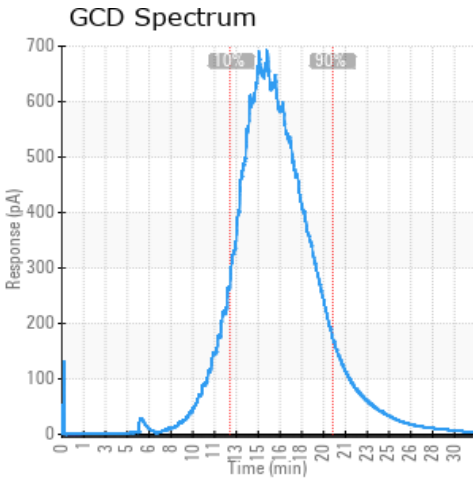
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/05/19	12/13/19	0y	PORT	424 / 218	26.5	35.7	0.148	0.067	704 / 374	794 / 423	906 / 485	1.21
05/09/19	05/17/19	2y	PORT	439 / 226	21.3	35.3	0.174	0.045	728 / 387	816 / 436	930 / 499	0.49
09/26/18	10/09/18	2y		435 / 224	0.00	35.4	0.07	0.042	728 / 387	811 / 433	909 / 487	0.00
04/04/18	04/11/18	9y		435 / 224	8.6	35.4	0.107	0.021	731 / 389	820 / 438	925 / 496	0.81
07/14/17	07/25/17	6y	PORT	446 / 230	48.8	36.0	0.21	0.048	727 / 386	814 / 434	920 / 494	0.38
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	
12/05/19	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	46	0	
05/09/19	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	46	0
09/26/18	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	43	0
04/04/18	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	46	0
07/14/17	12	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	204	2
Baseline Data			0	0						0			0	0					0					280	

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



Historical Comments	
05/09/19	Oil is suitable for continued use. Please re-submit sample in 1 year.(GCD) 90% Distillation Point is marginally high. Acid number is normal, but has risen since the last sample, monitor at next test interval. Very light debris is noted by the lab.
09/26/18	Fluid is suitable for continued use. Please re-submit sample fluid in September 2019.
04/04/18	The fluid is suitable for continued use. 'Venting' the system may assist in bringing down the 90% distillation point. This value has been slightly elevated historically. Please re-submit sample in 12 months. (GCD) 90% Distillation Point is marginally high.
07/14/17	Oil is suitable for continued use; Please submit next annual sample during July 2018;Wear Metals are low; Water is low; Acid number is low; Viscosity is satisfactory; Pentane insolubles are low; very light debris found in sample; (GCD) 90% Distillation Point is marginally high. This can be mitigated by 'venting' the heat transfer system

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