

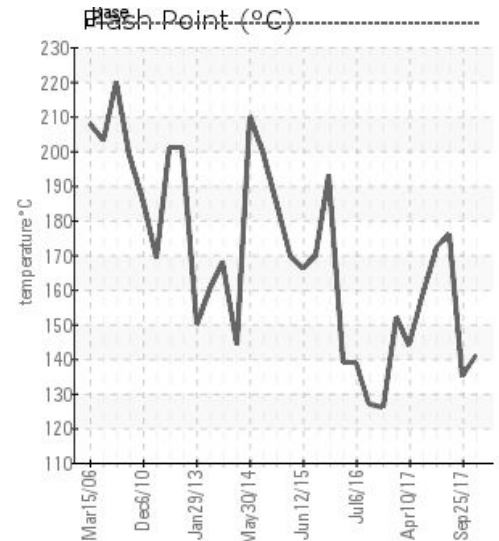
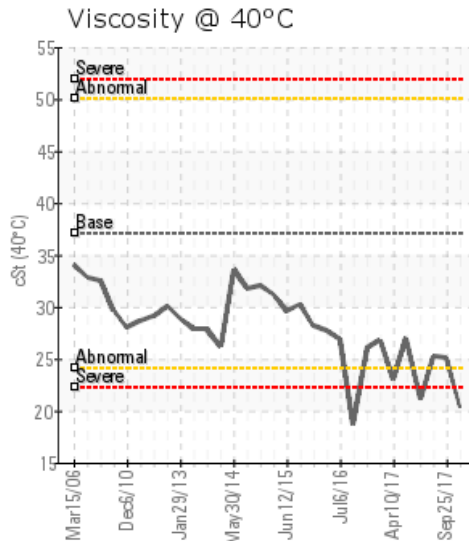
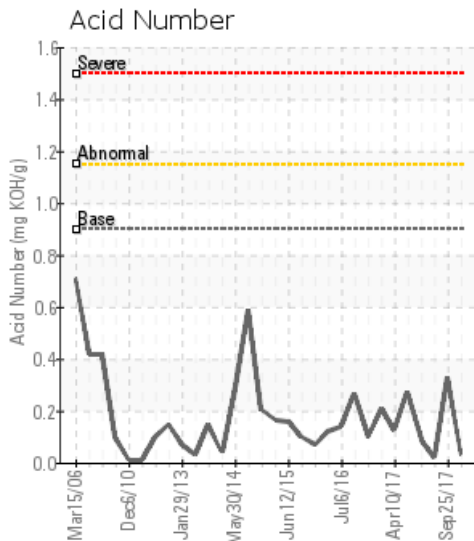
WEST HOT OIL SYSTEM

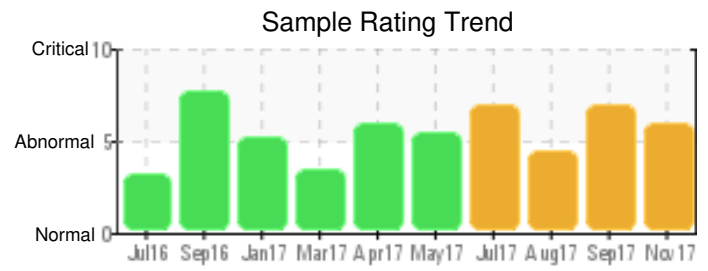
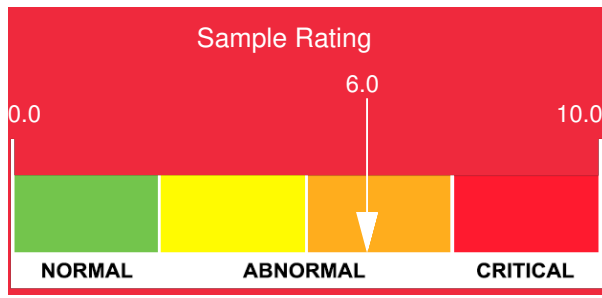
Customer: PTRHTF10004	System Information	Sample Information
ADM VITAMIN E PLANT 3700 EAST DIVISION STREET DECATUR, IL 62526 USA Attn: Rick Cluck Tel: (217)451-7770 E-Mail: ricky.cluck@adm.com	System Volume: 2200 gal Bulk Operating Temp: 550F / 288C Heating Source: Blanket: Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID Make: AMERICAN	Lab No: 02183586 Analyst: Joe Goecke Sample Date: 11/21/17 Received Date: 11/22/17 Completed: 11/27/17 To discuss this report contact Joe Goecke at (859)543-0092

Recommendation: Drop in viscosity from last sample of 5 cSt, Flash point relatively the same slight decrease in low boilers indicate a fairly stable sample from last sample. Should consider a planned change out during next quarter due to the repeated low viscosity and high flash point. Resample in 45 days to confirm trend.

Comments: COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.

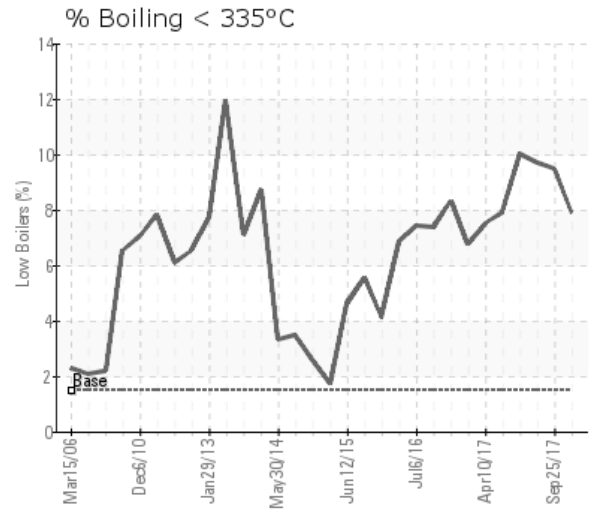
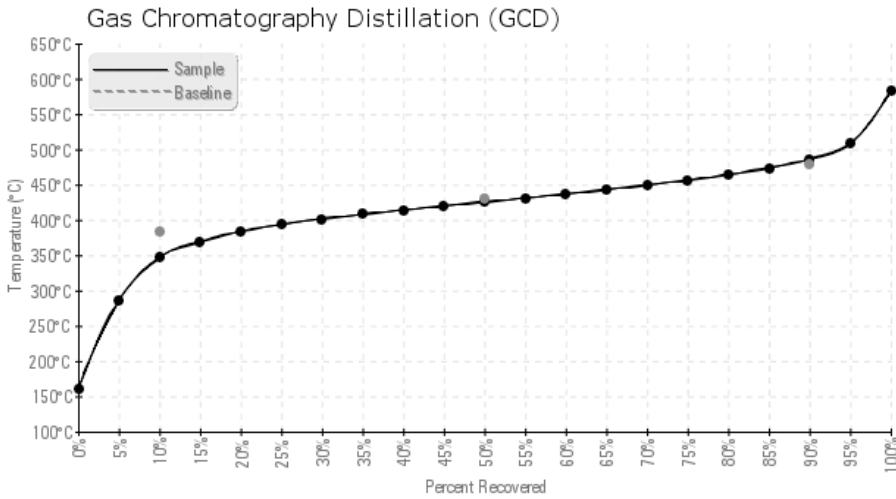
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/21/17	11/22/17	2y		286 / 141	7.3	20.3	0.031	0.036	656 / 347	798 / 425	907 / 486	7.89
09/25/17	10/02/17	0y		275 / 135	4.1	25.1	0.33	0.036	635 / 335	800 / 427	917 / 491	9.48
08/14/17	08/22/17	0y	EAST PUMP WEST UNIT	349 / 176	21.2	25.3	0.02	0.045	632 / 334	796 / 425	907 / 486	9.71
07/05/17	07/11/17	0y	24B H.O. PUMP	342 / 172	19.3	21.1	0.089	0.033	627 / 331	798 / 426	910 / 488	10.04
05/22/17	05/26/17	0y	EAST PMP WEST UNIT	316 / 158	27.8	27.0	0.274	0.065	656 / 347	805 / 429	911 / 488	7.91
04/10/17	04/13/17	0y	b24B HOT OIL PUMP	291 / 144	3.7	23.0	0.126	0.035	663 / 350	814 / 434	926 / 497	7.52
Baseline Data				459 / 237		37.12	0.90		721 / 383	807 / 431	892 / 478	1.5





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
11/21/17	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	28	0
09/25/17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
08/14/17	7	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	17
07/05/17	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	0
05/22/17	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	19
04/10/17	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
Baseline Data			0	0						0			0	0					0				230	

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



Historical Comments

09/25/17	Flash point has dropped by 40 degrees C and is extremely low. low boilers are steady from last sample and Viscosity remained unchanged. While the flash point
08/14/17	Sample looks very similar to last results. No action is required at this time. Although low boilers are approaching 10% they are slightly less than last month.
07/05/17	Several Items need to be watched and system change out should be planned for the next quarter.
05/22/17	Low boilers continue to be on a slow rise, but viscosity and flash point have risen slightly since last sample possibly due to fresh oil top-up. Acid number has doubled since last sample. We suggest resampling at 3 months to watch for rapid rise in low boilers and decrease in flash point with a possible change in third or fourth quarter this year. COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD) 90% Distillation Point is marginally high. (GCD) 10% Distillation Point is marginally low.
04/10/17	Low boilers rose slightly from last sample, flash point dropped slightly and viscosity dropped from last sample. I recommend continued use but resample in 45

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