

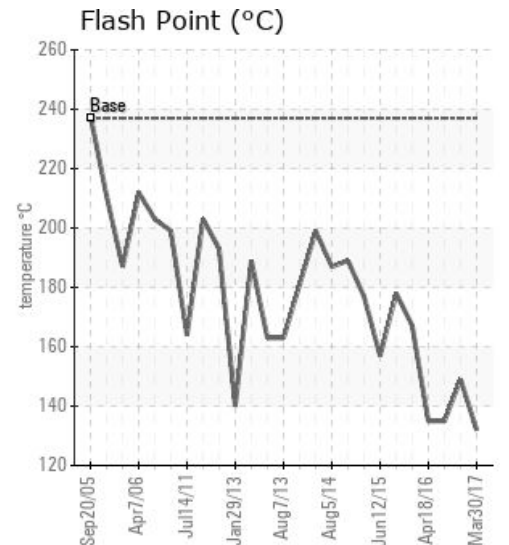
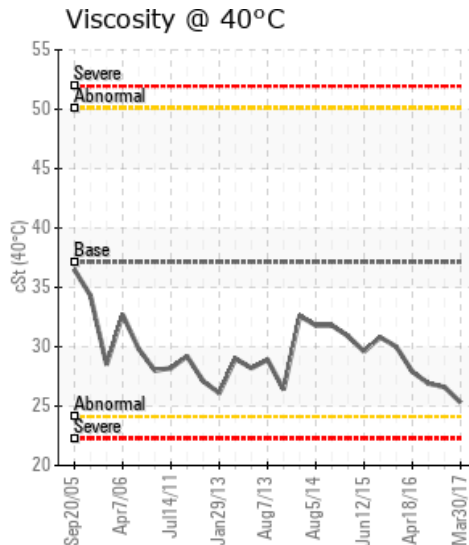
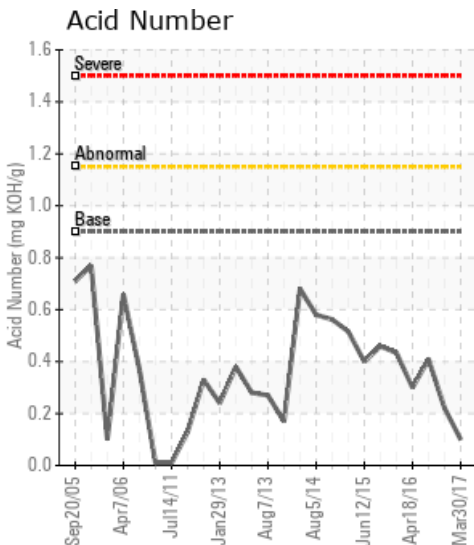
[VIT E 116] EAST

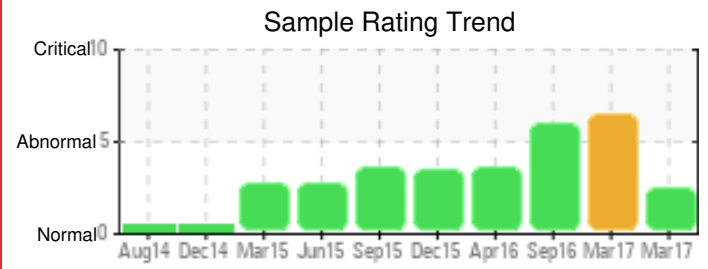
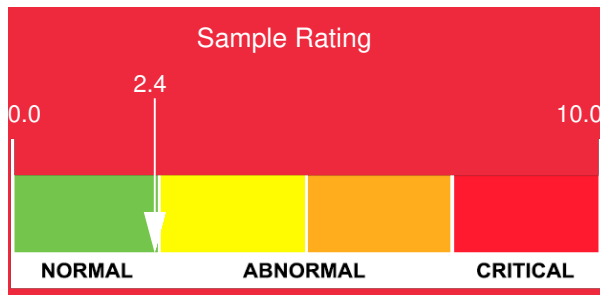
Customer: PTRHTF10004	System Information	Sample Information
ADM VITAMIN E PLANT 3700 EAST DIVISION STREET DECATUR, IL 62526 USA Attn: Rick Cluck Tel: (217)451-7770 E-Mail: ricky.cluck@adm.com	System Volume: 2200 gal Bulk Operating Temp: 550F / 288C Heating Source: Blanket: Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID Make: AMERICAN HEATING	Lab No: 02227444 Analyst: Joe Goecke Sample Date: 03/30/17 Received Date: 07/11/18 Completed: 07/13/18 To discuss this report contact Joe Goecke at (859)543-0092

Recommendation: Flash point is low, Sample date says 3/30/2017? low boilers are at an acceptable level and lower than previous sample. System okay to continue and resample in 45-60 days.

Comments: COC Flash Point is severely low. (GCD) 10% Distillation Point is marginally low.

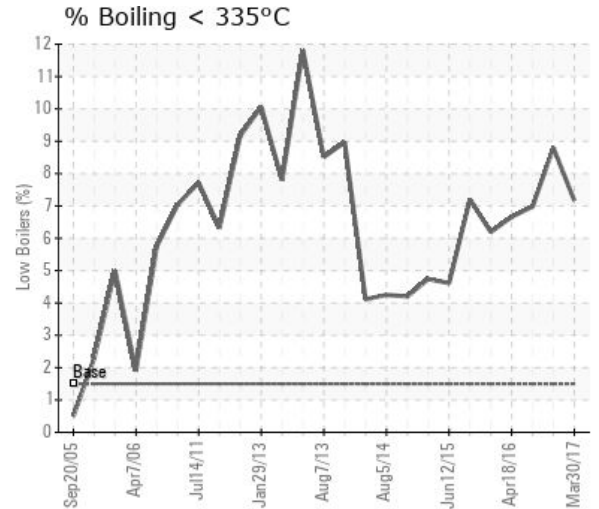
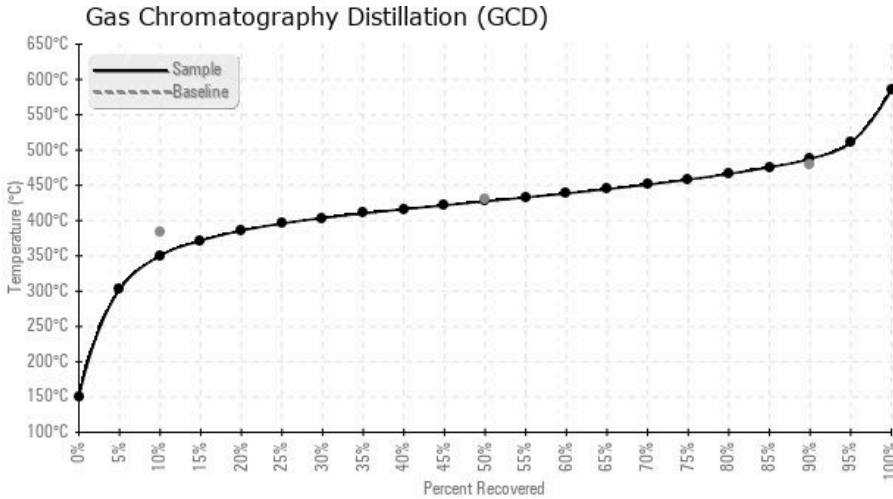
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/30/17	07/11/18	1y	WEST PUMP	270 / 132	15.8	25.3	0.10	0.033	663 / 350	801 / 427	910 / 488	7.17
03/30/17	04/04/17	1y	EAST PUMP ON EAST HO	300 / 149	10.3	26.6	0.22	0.022	646 / 341	801 / 427	906 / 485	8.80
09/06/16	09/12/16	0y	B2 H.O. PUMP	275 / 135	12.0	26.9	0.409	0.062	666 / 352	803 / 428	903 / 484	6.98
04/18/16	04/26/16	2y	FILTER	275 / 135	8.0	27.9	0.30	0.038	670 / 354	804 / 429	908 / 487	6.66
12/03/15	12/11/15	0y	FILTER STREAM	333 / 167	2.2	30.0	0.434	0.029	671 / 355	800 / 427	900 / 482	6.19
09/15/15	09/29/15	12y		352 / 178	20.2	30.8	0.459	0.030	660 / 349	791 / 422	901 / 483	7.20
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
03/30/17	13	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	8	0
03/30/17	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	2
09/06/16	50	0	1	0	0	0	1	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	13	0
04/18/16	41	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	30	0
12/03/15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
09/15/15	2	0	0	0	0	0	1	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	
03/30/17	While the viscosity has only changed slightly the low boiler level is approaching 9% and the flash point is still low around 300 F. We recommend resampling at half the regular cycle to monitor the low boilers and flash point which may indicate a change in the upcoming months since there is no other way to reduce the low boilers. COC Flash Point is severely low. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high.
09/06/16	The viscosity of the fluid has dropped further while the flash point remains low at 275 (about 165F below fresh oil). The low boilers are approaching the 7% mark now. We suggest to start planning a replacement for this fluid in the upcoming months since venting would be the only way to remove low boilers but that is not possible at this location. COC Flash Point is severely low. (GCD) 10% Distillation Point is marginally low.
04/18/16	*** NOTE: COC Flash run two times, 131°C and 135°C. ***. While the flash point was measured twice, the considerable drop can not be explained because the gas chromatography results (GCD) show the same amount of low boilers (6.66% at 635F). Other properties look normal. Please keep monitoring quarterly. COC Flash Point is severely low.
12/03/15	Results look similar to the last sample. Let's keep monitoring at the same quarterly interval. COC Flash Point is marginally low. (GCD) 10% Distillation Point is marginally low.
09/15/15	Flash point is holding strong however distillation profile shows an increase in light ends that didn't translate in a noticeable drop in flash point or viscosity just yet. Other properties look normal. Re-sample at next scheduled interval. (GCD) 10% Distillation Point is marginally low. (GCD) % < 335°C is marginally high. COC Flash Point is marginally low.

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