

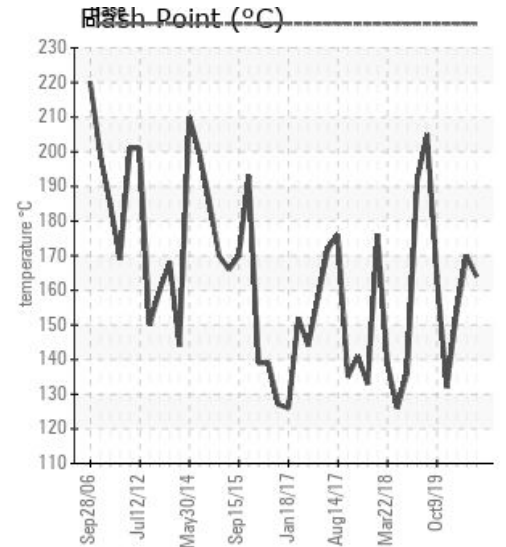
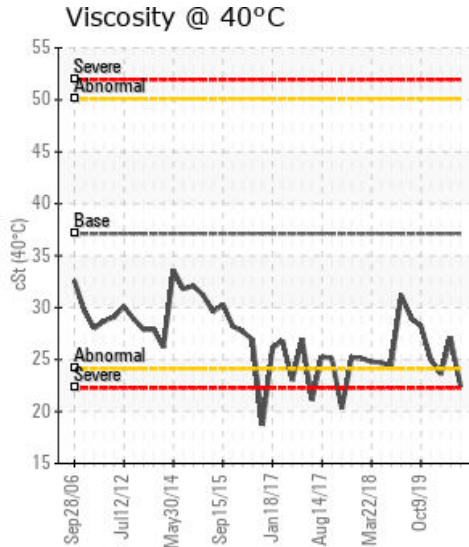
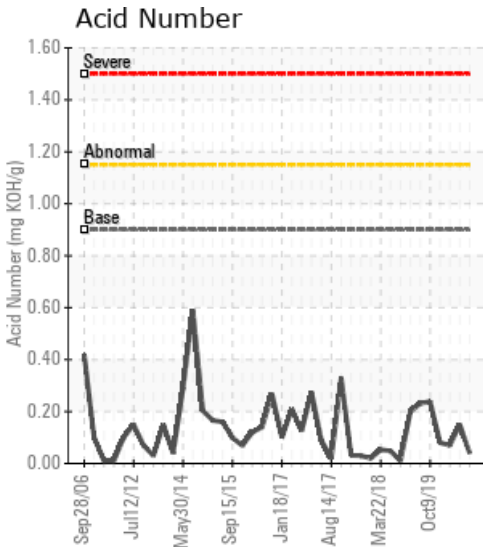
WEST HOT OIL SYSTEM

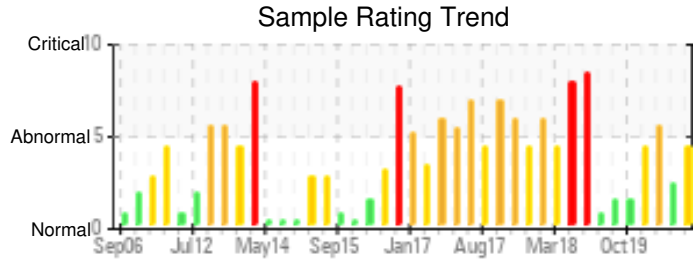
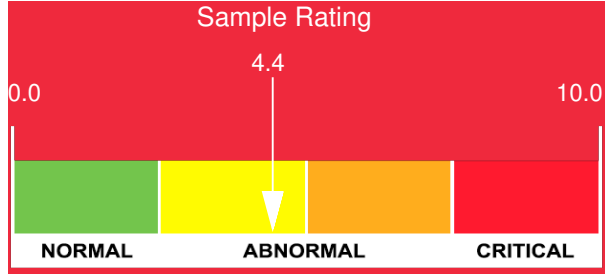
Customer: PTRHTF10004	System Information	Sample Information
ADM VITAMIN E PLANT 3700 EAST DIVISION STREET DECATUR, IL 62526 USA Attn: Rick Cluck Tel: (217)451-7770 E-Mail: ricky.cluck@adm.com	System Volume: 2200 gal Bulk Operating Temp: 550F / 288C Heating Source: Blanket: Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID Make: AMERICAN	Lab No: 02399863 Analyst: Joe Goecke Sample Date: 01/15/21 Received Date: 01/26/21 Completed: 02/08/21 Joe Goecke Joe.goecke@hollyfrontier.com

Recommendation: Viscosity dropped 5 points, flash point dropped 6 degrees C, and low boilers have risen almost 4%. This system is nearing a partial or full change. I suggest continuing to run the system but resample in 2 months and prepare for maintenance this spring or early summer.

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

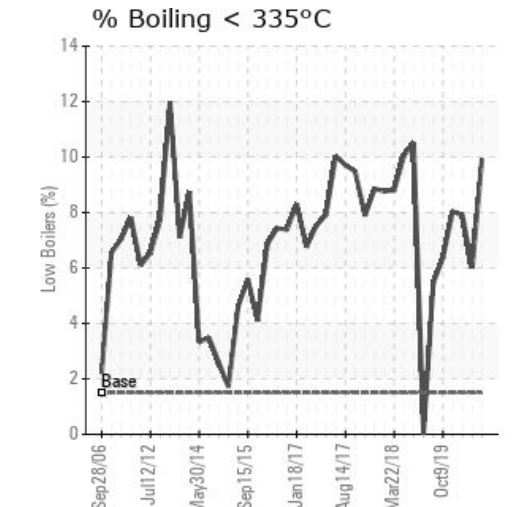
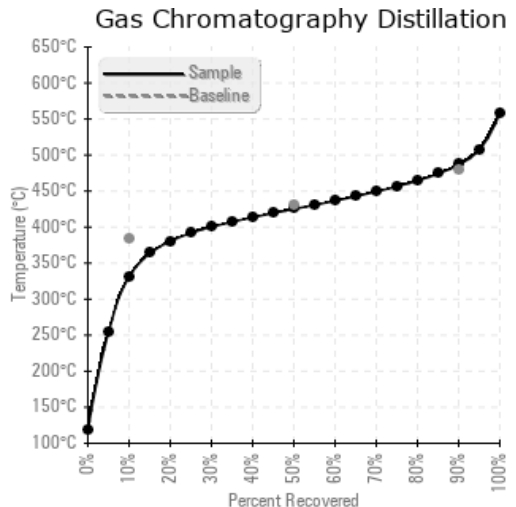
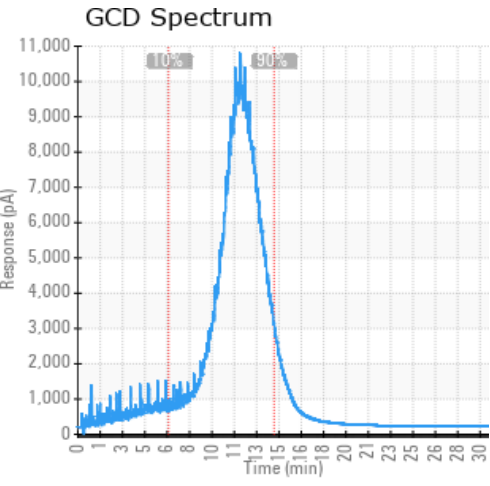
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/15/21	01/26/21	0y		327 / 164	0.00	22.4	0.04	0.062	628 / 331	797 / 425	908 / 487	9.93
11/25/20	12/08/20	0y	Pump	338 / 170	9.1	27.1	0.15	0.107	683 / 362	805 / 430	911 / 488	6.00
08/25/20	09/03/20	0y	24B	309 / 154	11.9	23.6	0.07	0.042	662 / 350	805 / 430	912 / 489	7.90
05/08/20	05/13/20	0y		270 / 132	14.5	25.0	0.08	0.036	659 / 348	801 / 427	909 / 487	8.04
10/09/19	10/16/19	1y		327 / 164	7.7	28.2	0.239	0.131	680 / 360	805 / 430	909 / 487	6.38
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	
01/15/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	
11/25/20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
08/25/20	14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	12	0
05/08/20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0
10/09/19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
Baseline Data			0	0						0			0	0				0	0					230	

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



Historical Comments

11/25/20	All indicators are better than previous sample. Viscosity is up, Flash point is up and low boilers are down. Continue to use and resample at next scheduled interval. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally high.
08/25/20	Viscosity a bit lower, flash point actually a bit higher but still in the danger area. low boilers decreased a bit as well. system seems stable and okay to run to next sample date. COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 90% Distillation Point is marginally high. (GCD) 10% Distillation Point is marginally low.
05/08/20	Viscosity and flash point have dropped since last sample and are approaching a level of concern. Low boilers are up 2% and need to be monitored closer. continue to use but resample in 60 days. COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.
10/09/19	Flash point has dropped to a cautious level and low boilers are at 6%. Continue to monitor and resample at next interval. Increase of low boilers was slight. COC Flash Point is severely low.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.