

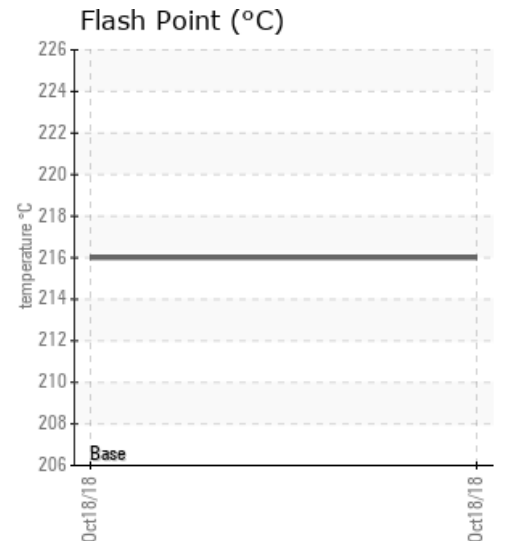
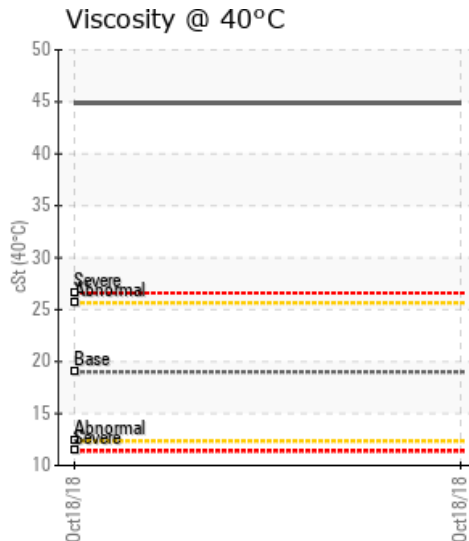
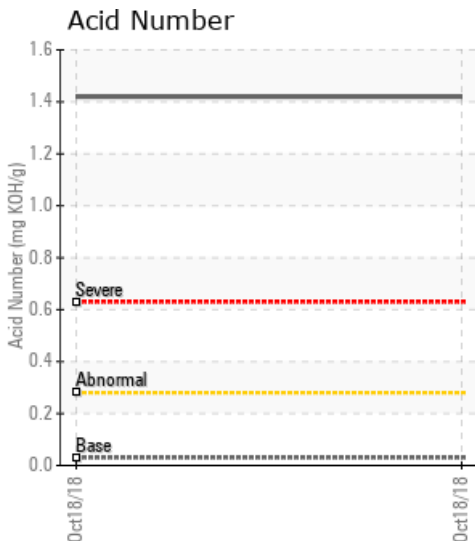
## HOT OIL HEATER ABQ-1

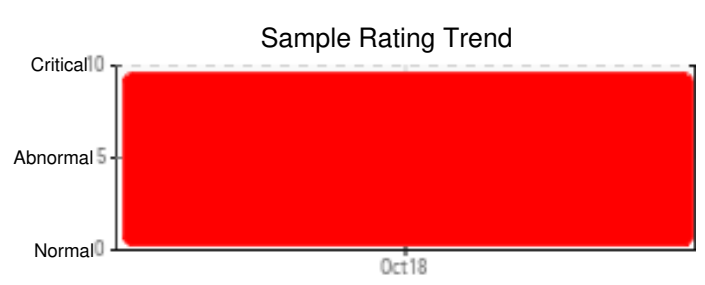
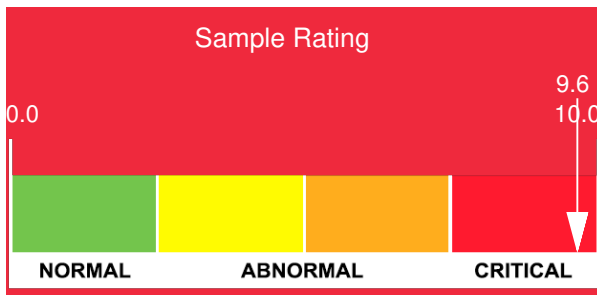
Customer: PTRHTF10213	System Information	Sample Information
HOLLY FRONTIER ASPHALT 4949 EDITH BLVD N.E. ALBUQUERQUE, NM 87107 USA Attn: Luis A Contreras Tel: (316)323-4680 E-Mail: luis.contreras@hollyfrontier.com	System Volume: 650 gal Bulk Operating Temp: Not Specified Heating Source: Blanket: Fluid: MONSANTO THERMINOL 55 Make: INDUSTRIAL COMBUSTIO	Lab No: 02267070 Analyst: Matthew Hoeffner Sample Date: 10/18/18 Received Date: 02/11/19 Completed: 02/26/19

Recommendation: Fluid acid number is very high as well as the pentane insoluble indicating a severely degraded fluid. The fluid appears to have been topped off with a different chemistry than the Therminol 55 believed to be present. To prevent issues with operations and reliability of the system going forward planning should begin for cleaning the system and refilling with fresh fluid.

Comments:

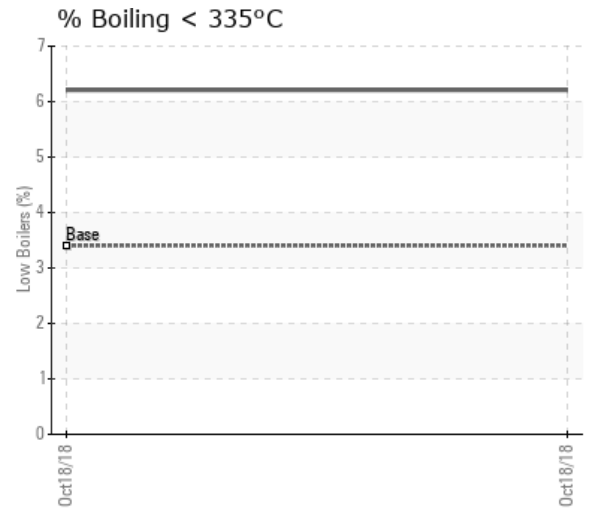
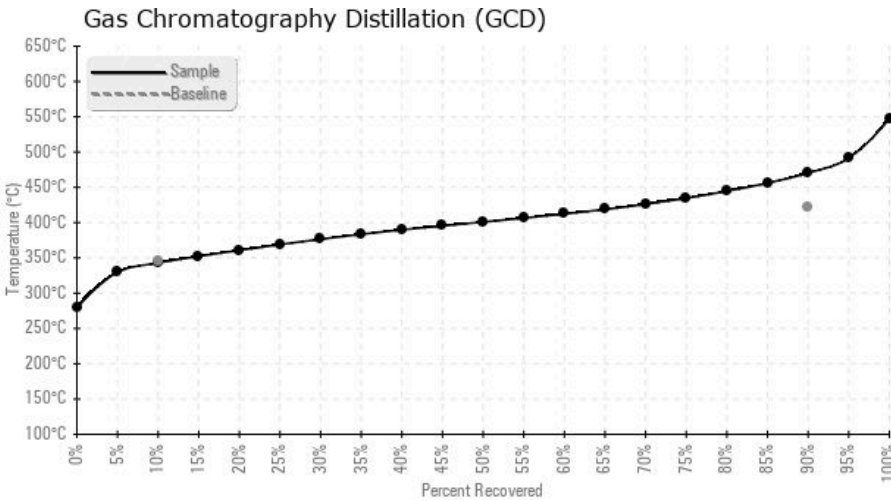
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/18/18	02/11/19	15y	TK151 COIL DRAIN VAL	421 / 216	108.5	44.9	1.42	3.48	649 / 343	754 / 401	879 / 470	6.21
Baseline Data				349 / 176		19.0	0.03		655 / 346		790 / 421	3.40





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
10/18/18	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	120	0	4	2
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


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