

MAIN HOT OIL SYSTEM

Customer: PTRHTF10068
 Certainteed - Saint Gobain
 1077 PLEASANT ST
 NORWOOD, MA 02062 USA
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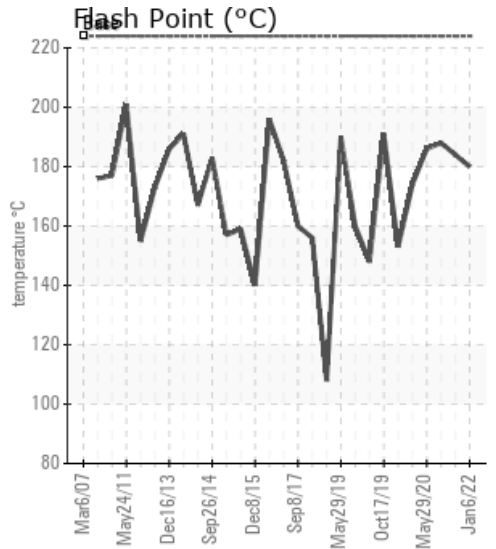
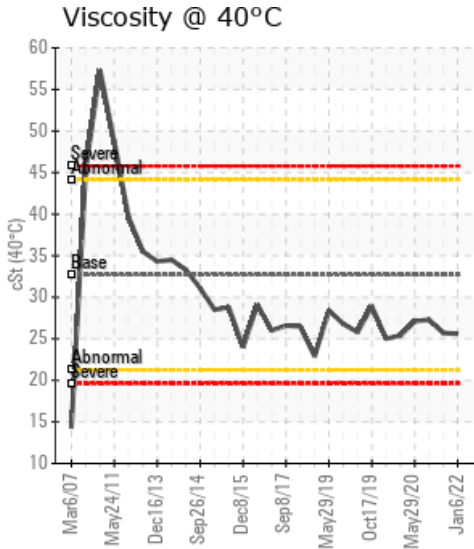
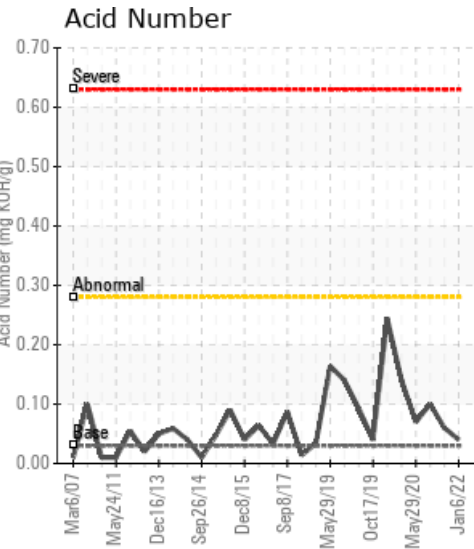
System Information
 System Volume: 5000 gal
 Bulk Operating Temp: 560F / 293C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA CALFLO AF
 Make: A.M.KINNEY

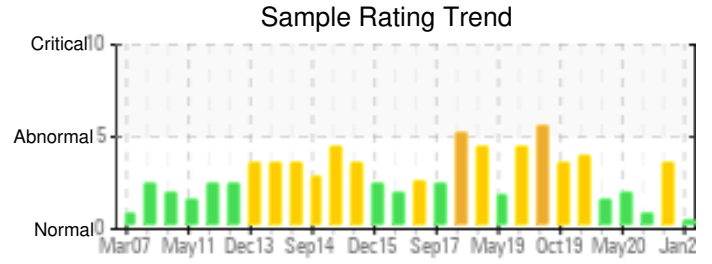
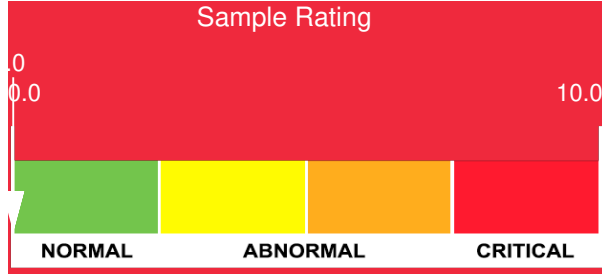
Sample Information
 Lab No: 02466657
 Analyst: Joe Goecke
 Sample Date: 01/06/22
 Received Date: 01/18/22
 Completed: 01/19/22
 Joe Goecke
 Joe.goecke@HFSinclair.com

Recommendation: Flash point and viscosity are both slightly lower then normal, and low boilers starting to creep higher. continue to use as normal and resample in 6-8 months.

Comments: COC Flash Point is marginally low.

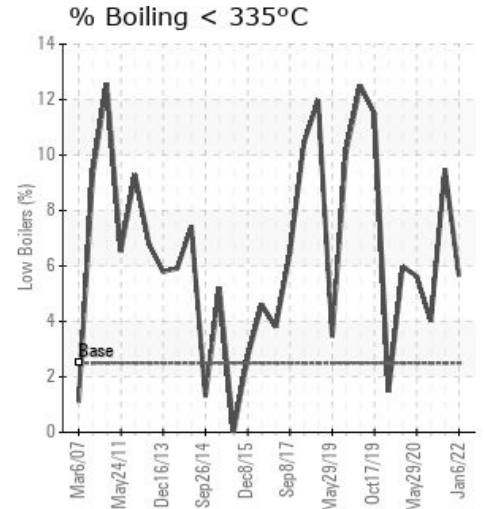
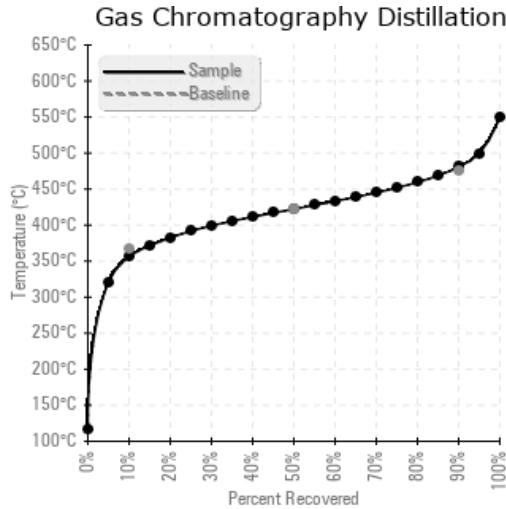
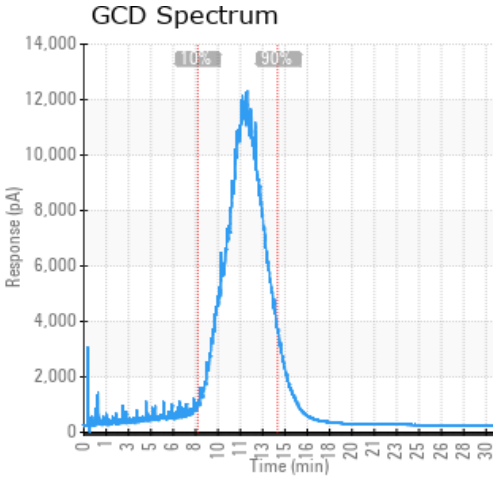
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/06/22	01/18/22	0.0y	heat exchange	356 / 180	29.5	25.6	0.04	0.047	673 / 356	792 / 422	897 / 481	5.64
08/31/21	09/10/21	0.0y		363 / 184	17.9	25.7	0.06	0.040	635 / 335	764 / 407	894 / 479	9.50
01/27/21	02/02/21	0.0y	Heat exchange	370 / 188	17.2	27.3	0.10	0.081	685 / 363	796 / 424	901 / 483	4.00
05/29/20	06/09/20	1.0y	HEAT EXCHANGER	367 / 186	28.6	27.1	0.07	0.014	671 / 355	792 / 422	907 / 486	5.63
05/04/20	05/13/20	0.0y	HEAT EXCHANGER	345 / 174	19.7	25.4	0.14	0.086	674 / 356	793 / 423	906 / 485	5.98
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





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
01/06/22	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0
08/31/21	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
01/27/21	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	0
05/29/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
05/04/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
Baseline Data			0	0						0			0	0					0				270	

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



Historical Comments

08/31/21	low boilers are approaching 10%. This is over double the last sample and starting to affect the viscosity. Consider venting the system if have not done and resample at next scheduled date. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. COC Flash Point is marginally low.
01/27/21	The Main Hot Oil System sample results show a slight increase in Flash Point - 186 to 188, however, Acid number had a slight increase also from .07 to .10. GCD at 10% remains good at 363.0 as well the GCD 90% at 482.5. No Vanadium was detected. Continue to monitor by sampling at a routine basis. COC Flash Point is marginally low.
05/29/20	It appears the rented unit to strip off low boilers has helped bring the flash point and viscosity higher. This might help limp along for a while. let's keep monitoring every 6 months and re-evaluate the best way to maintain the fluid moving forward (sweetening or rent the unit). Many customers run with low oil levels in the expansion tank. If your expansion tank is <75% full when in operation, best practices suggest that it should be, so fresh oil could be added to keep with best practices but also to help maintain the oil properties. (GCD) 90% Distillation Point is marginally high. COC Flash Point is marginally low.
05/04/20	Results for the Main Hot Oil System have shown the continued decline of the condition of the fluid. COC Flash Point is low at 174 degrees. GCD 90% has risen to 485.4. Recommendations are consistent with the previous sample recommendation. Continue with the plan in place to remove low boilers and/or sweeten the system with fresh fluid. COC Flash Point is abnormally low. (GCD) 90% Distillation Point is marginally high.

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