

**[06-12-044-13W5] H-1611**

**Customer: PTRHTF20227**  
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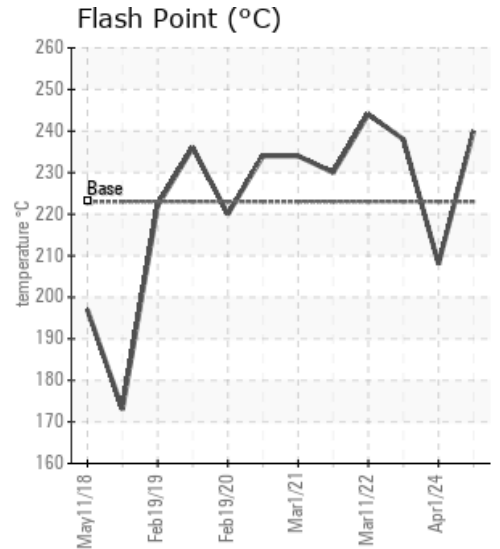
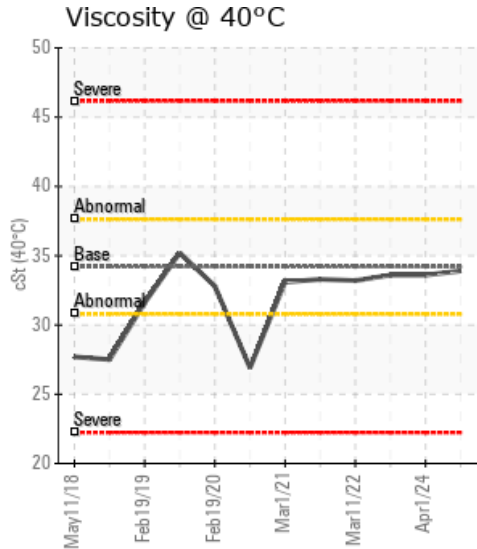
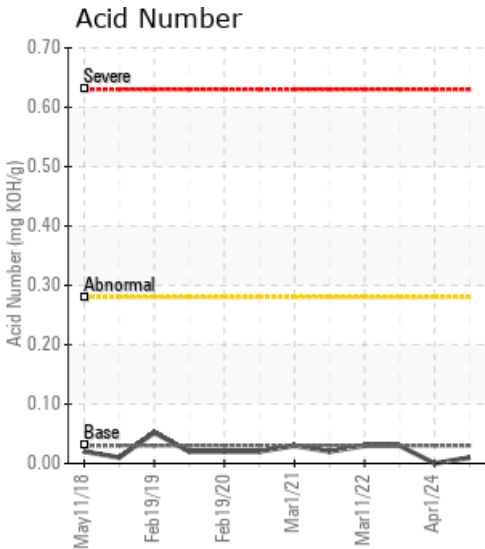
**System Information**  
 System Volume: 0 ltr  
 Bulk Operating Temp: 383F / 195C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA PETRO-THERM  
 Make: HEAT TECH

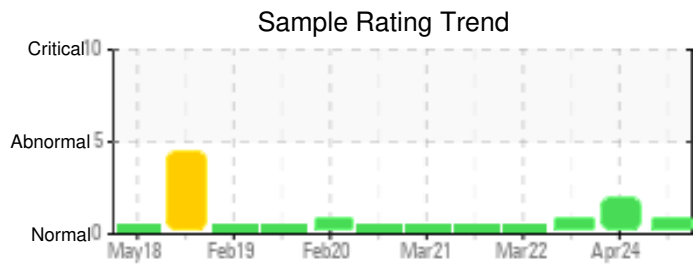
**Sample Information**  
 Lab No: 02631077  
 Analyst: Lyle Dach  
 Sample Date: 04/19/24  
 Received Date: 04/23/24  
 Completed: 04/25/24  
 Lyle Dach  
 lyle.dach@HFSinclair.com

Recommendation: Sample results indicate that the fluid is in suitable condition for continued service. Previous calcium contamination must have been in the sample container or the sample point was not purged out well. Resample in 12 months.

Comments: (GCD) 90% Distillation Point is marginally high.

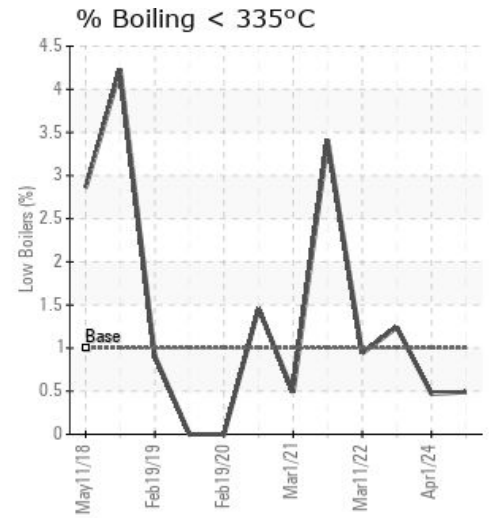
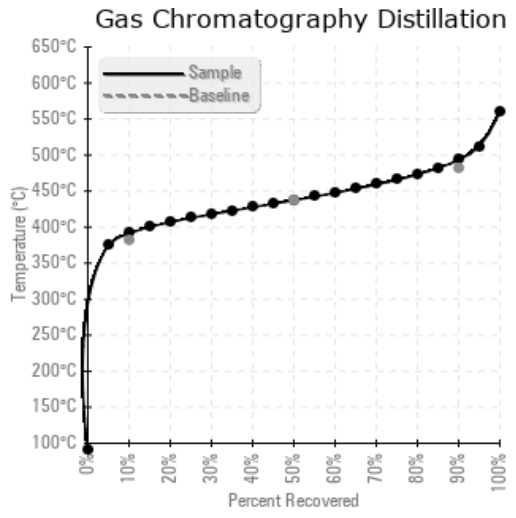
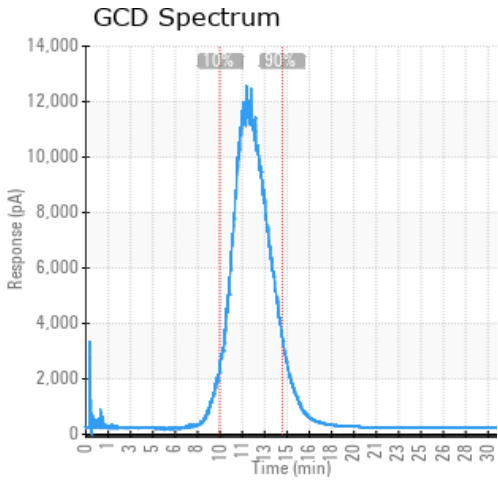
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
04/19/24	04/23/24	9.5y		464 / 240	6	33.9	0.01	0.022	736 / 391	819 / 437	920 / 493	0.49
04/01/24	04/03/24	0.0y	pump discharge	406 / 208	5	33.6	0.00	0.280	738 / 392	820 / 438	919 / 493	0.47
03/14/23	03/20/23	8.5y	5 way	460 / 238	37.7	33.6	0.03	0.037	733 / 390	818 / 437	919 / 493	1.24
03/11/22	03/22/22	7.5y	5 way	471 / 244	17.1	33.2	0.03	0.018	734 / 390	818 / 437	918 / 492	0.94
09/08/21	09/14/21	7.0y		446 / 230	0.00	33.3	0.02	0.038	696 / 369	786 / 419	913 / 489	3.41
<b>Baseline Data</b>				<b>433 / 223</b>		<b>34.2</b>	<b>0.03</b>		<b>720 / 382</b>	<b>817 / 436</b>	<b>900 / 482</b>	<b>1.00</b>





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
04/19/24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/01/24	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	0	1	2
03/14/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/11/22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
09/08/21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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

04/01/24	Advise check for source of calcium entering the thermal fluid, was sample container exposed to calcium? The fluid is suitable for further service. Resample in 6 months. Calcium ppm levels are abnormally high. (GCD) 90% Distillation Point is marginally high.
03/14/23	Fluid looks to be in good condition and would be suitable for continued use. The 90% distillation point is slightly high, ensure blanket gas is functioning properly. Resample in 12 months. (GCD) 90% Distillation Point is marginally high.
03/11/22	Sample results indicate that the fluid is in very good condition and is suitable for continued service. Resample in 12 months.
09/08/21	Sample appears to be in good condition, Total acid and flash point are good and GCD is in the normal range. Resample in 6 months.

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