

### HOT OIL HEATER #3

**Customer: PTRHTF10070**  
 CERTAINTEED - SAINT GOBAIN  
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 PORTLAND, OR 97210 USA  
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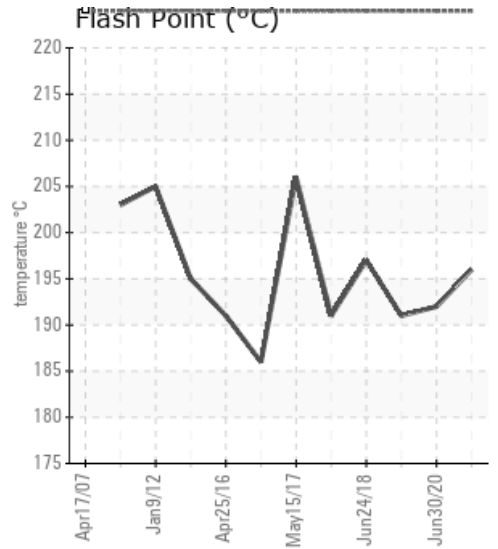
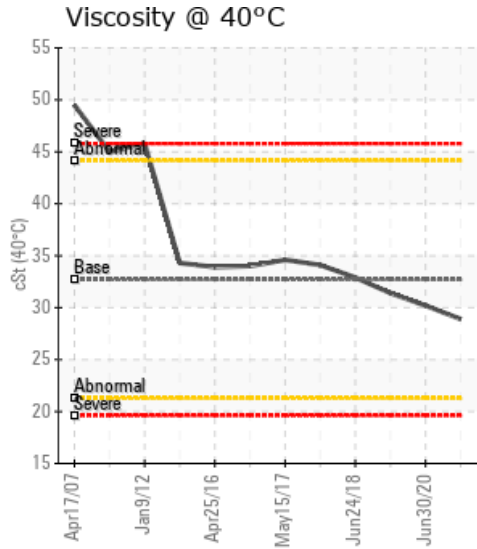
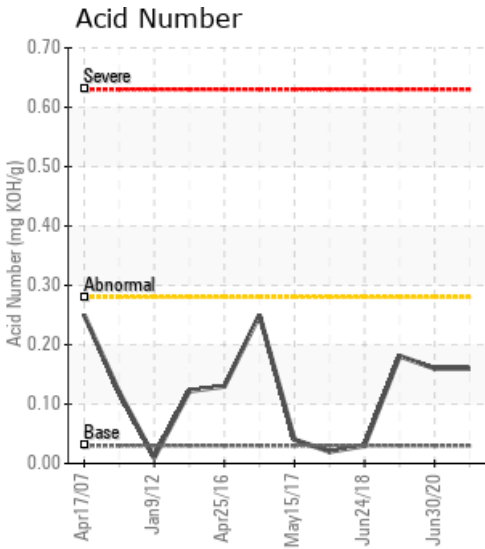
**System Information**  
 System Volume: 1200 gal  
 Bulk Operating Temp: 525F / 274C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA CALFLO AF  
 Make:

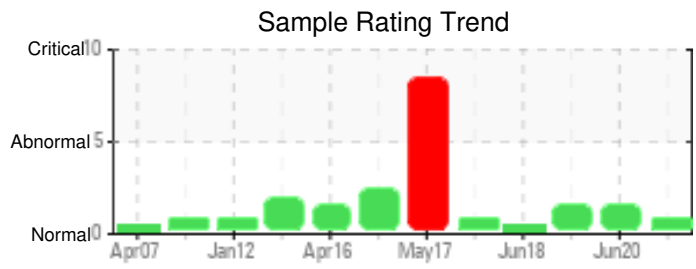
**Sample Information**  
 Lab No: 02472200  
 Analyst: Ron LeBlanc  
 Sample Date: 01/27/22  
 Received Date: 02/15/22  
 Completed: 02/25/22  
 Ron LeBlanc  
 Ronald.LeBlancSr@hollyfrontier.com

Recommendation: This indicates components boiling above the final boiling point of the fresh fluid which can lead to deposits in the heat exchanger.

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

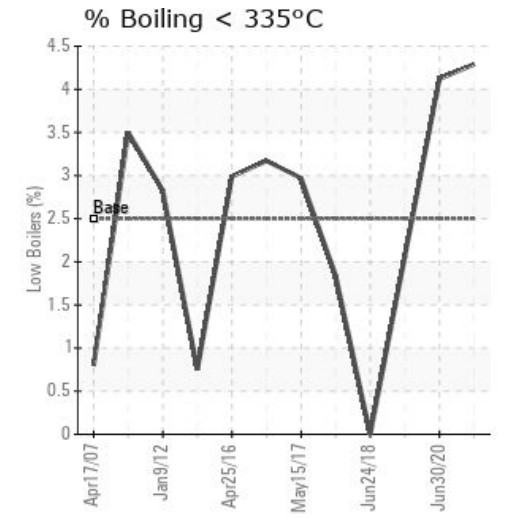
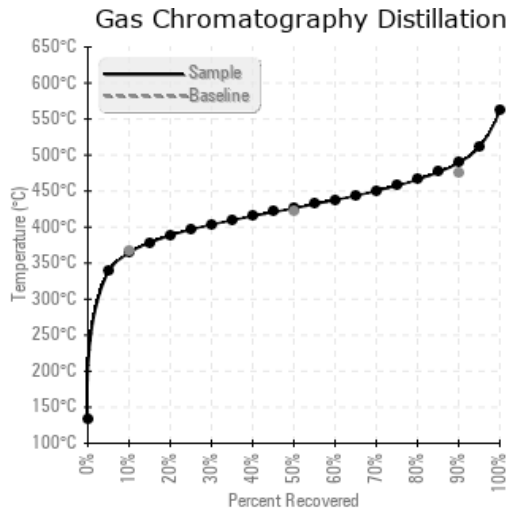
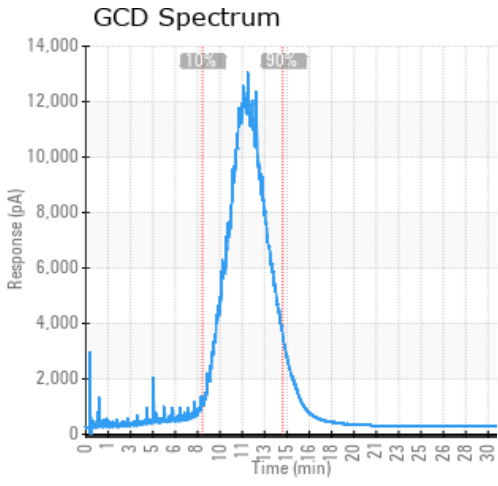
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/27/22	02/15/22	12.0m		385 / 196	14.8	28.9	0.16	0.092	688 / 365	799 / 426	912 / 489	4.29
06/30/20	07/22/20	0.0m		378 / 192	15.7	30.2	0.16	0.169	690 / 366	801 / 427	914 / 490	4.12
05/28/19	06/10/19	0.0m		376 / 191	14.6	31.4	0.181	0.348	694 / 368	798 / 426	913 / 490	2.06
06/24/18	07/12/18	0.0m	SAMPLE PORT	387 / 197	14.7	32.9	0.03	0.356	698 / 370	779 / 415	890 / 477	0.00
10/15/17	11/15/17	27.0m		376 / 191	17.2	34.1	0.02	0.120	692 / 367	791 / 422	896 / 480	1.84
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
01/27/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
06/30/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
05/28/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0
06/24/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	19	0
10/15/17	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	14	0
<b>Baseline Data</b>			0	0						0		0	0						0				270	

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



Historical Comments	
06/30/20	Virtually no change to the oil since the last sample. Flash point remains strong, no moisture or asphalt contamination. No action needed at this time. Keep up the sampling program and normal PMs around the system components. (GCD) 90% Distillation Point is abnormally high. COC Flash Point is marginally low.
05/28/19	The oil condition is fine. The acid number has risen a bit to 0.18 but it's still low. Normally this means the fluid is starting to oxidize. Just make sure the nitrogen blanket system on the expansion tank is operating well, because this is what prevents the oil from touching oxygen and oxidizing. (GCD) 90% Distillation Point is marginally high. COC Flash Point is marginally low.
06/24/18	Sample appears normal. Re-sample at regular interval.
10/15/17	The sample looks normal and in good condition. No actions needed at this time except normal monitoring and sampling. COC Flash Point is marginally low.

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