

# 45 TANK HOT OIL HEATER

**Customer: PTRHTF20033**  
 Moose Jaw Refinery  
 641 Manitoba St. E, Box 2000  
 Moose Jaw, SK S6H 6E3 CA  
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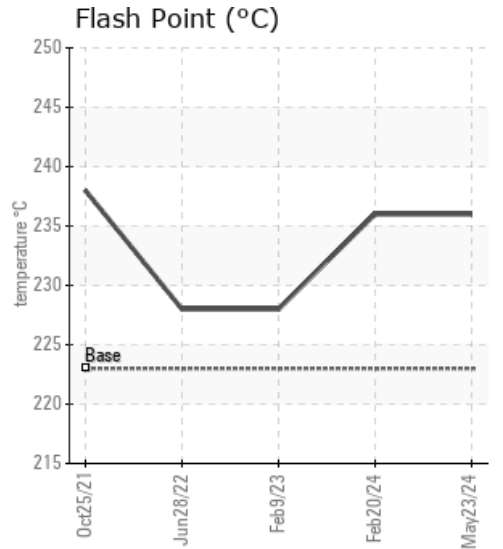
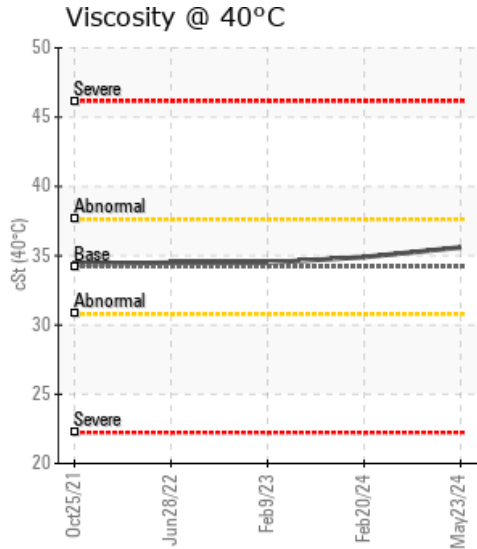
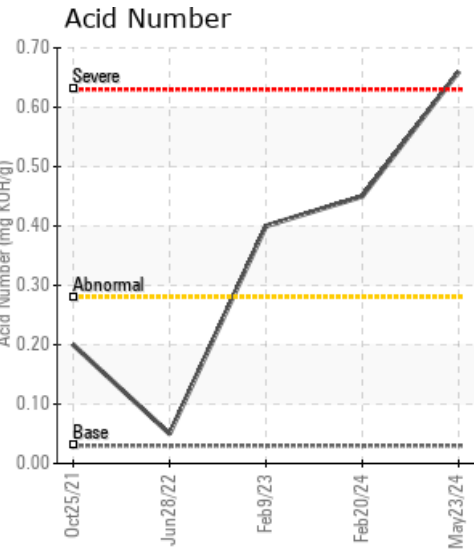
**System Information**  
 System Volume: 1918 gal  
 Bulk Operating Temp: 350F / 177C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA PETRO-THERM  
 Make:

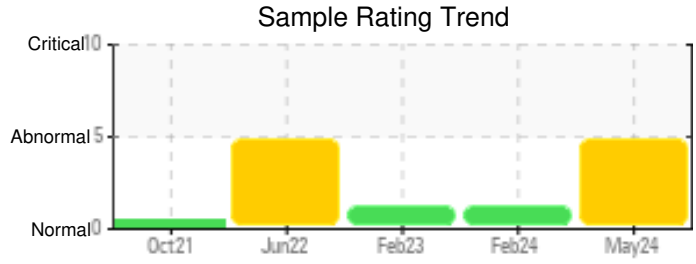
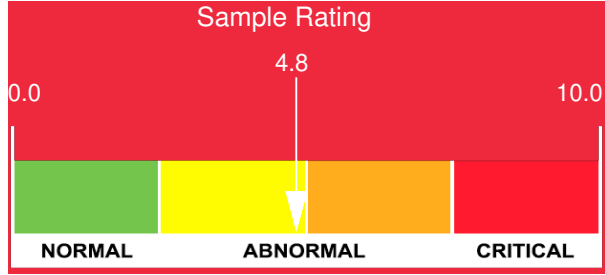
**Sample Information**  
 Lab No: 02638976  
 Analyst: Nick Finelli  
 Sample Date: 05/23/24  
 Received Date: 05/30/24  
 Completed: 06/18/24  
 Nick Finelli  
 nick.finelli@hfsinclair.com

Recommendation: Not sure when this was changed out last to see the current age on the oil as it is not updated on the resent sample details. But you should consider a system change out in the near future as you are showing some high numbers with the latest sample.

Comments: Pentane Insolubles levels are severely high. Acid Number (AN) is severely high.

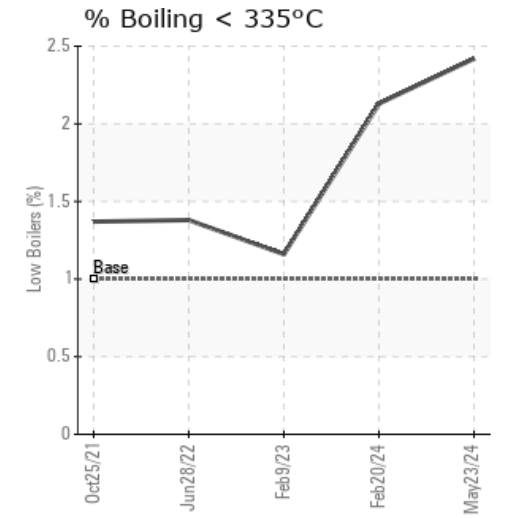
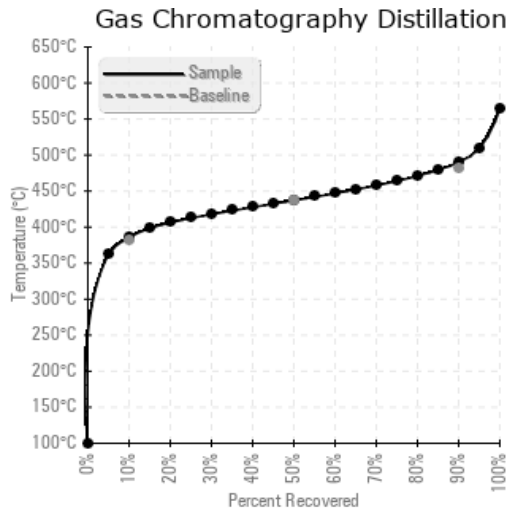
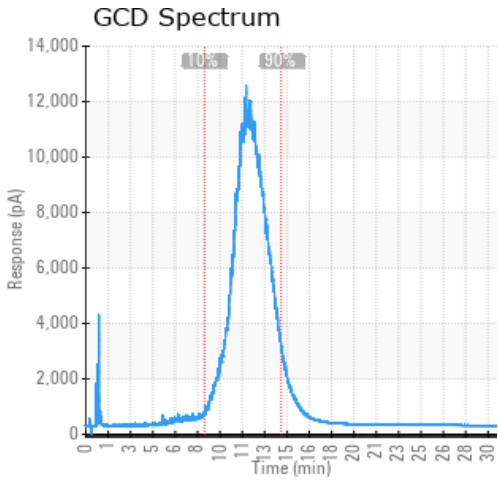
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/23/24	05/30/24	48.0m	pump discharge pipin	457 / 236	20	35.6	0.66	0.562	726 / 386	819 / 437	914 / 490	2.42
02/20/24	02/26/24	48.0m		457 / 236	26	34.9	0.45	0.379	728 / 387	819 / 437	915 / 491	2.13
02/09/23	02/16/23	38.0m	discharge piping	442 / 228	23.3	34.5	0.40	0.232	736 / 391	820 / 438	913 / 489	1.16
06/28/22	07/06/22	0.0m	suction piping	442 / 228	0.00	34.5	0.05	0.319	734 / 390	819 / 437	910 / 488	1.38
10/25/21	11/02/21	35.0m	SUCTION PIPING	460 / 238	20.5	34.4	0.20	0.251	734 / 390	820 / 438	913 / 489	1.37
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





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
05/23/24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/20/24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/09/23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/28/22	0	0	0	0	0	0	0	0	0	0	94	0	0	0	0	0	0	0	0	0	0	0	0	0
10/25/21	0	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	
02/20/24	The acid number is elevated but everything else looks ok. Oil is suitable for further use. We will continue to monitor and see if there are other changes in the future. Acid Number (AN) is abnormally high.
02/09/23	Acid number has increased marginally. We will monitor during its next sample interval. Acid Number (AN) is marginally n/a.
06/28/22	The fluid is in a good condition and suitable for further use. The Si (dirt) content is high. Pentane Insoluble (solids) content is slightly elevated. At this time the level of contamination is a minor concern but please consider filtration of the fluid. Re-sample in 6 months. Silicon ppm levels are severely high.
10/25/21	The fluid is in a good condition and suitable for further use. The bulk fluid temperature is listed as 350 degrees C. Considering fluid service life of 35 months and the condition of the fluid this temperature must be incorrect. Please correct this and re-sample in 12 months.

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