

[TOURMALINE / C-46-C/94-H-4] PROCESS HEAT MEDIUM

Customer: PTRHTF20046
 QUADRA CHEMICALS
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 EDMONTON, AB T5L 2H6 CA
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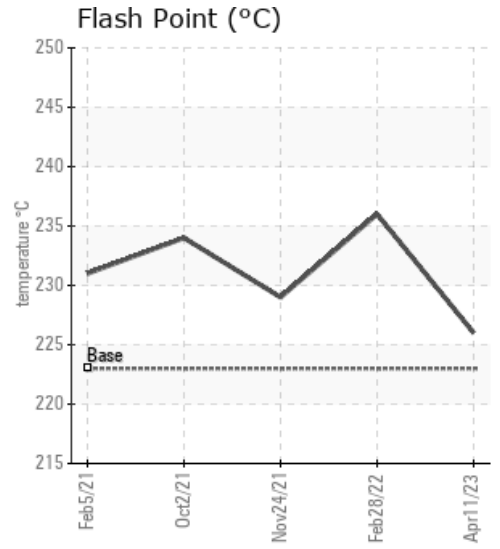
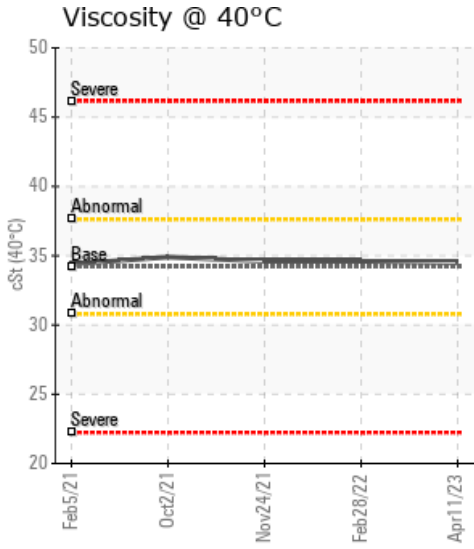
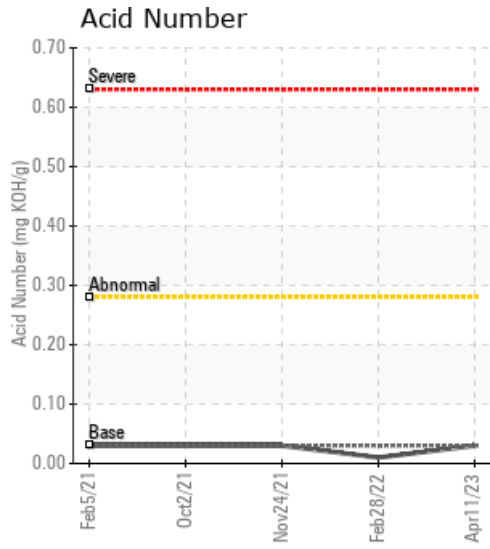
System Information
 System Volume: 240000 ltr
 Bulk Operating Temp: 410F / 210C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make: HEATECK

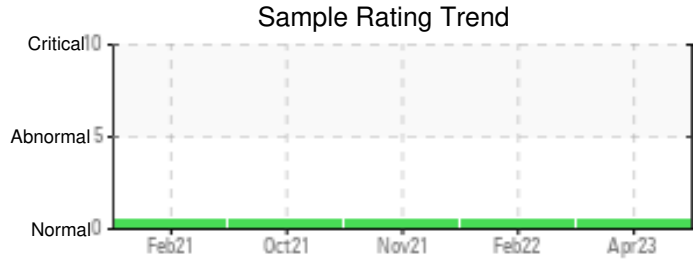
Sample Information
 Lab No: 02557333
 Analyst: Clinton Buhler
 Sample Date: 04/11/23
 Received Date: 05/12/23
 Completed: 05/16/23
 Clinton Buhler
 Clinton.Buhler@HFSinclair.com

Recommendation: Sample results indicate the fluid is in suitable condition for continued service. Please re-sample in 12 months.

Comments:

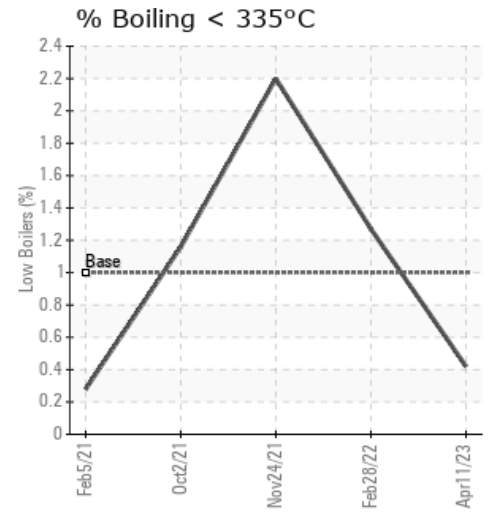
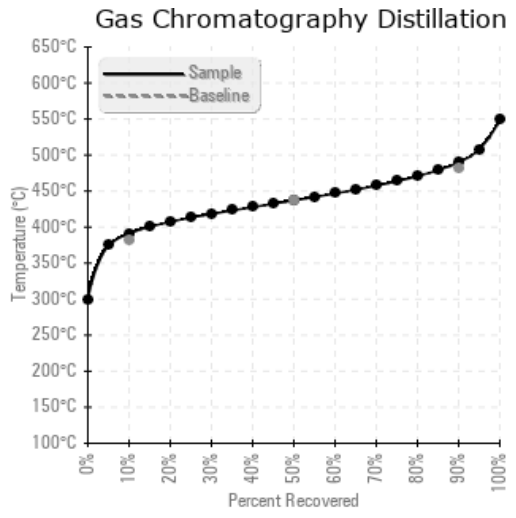
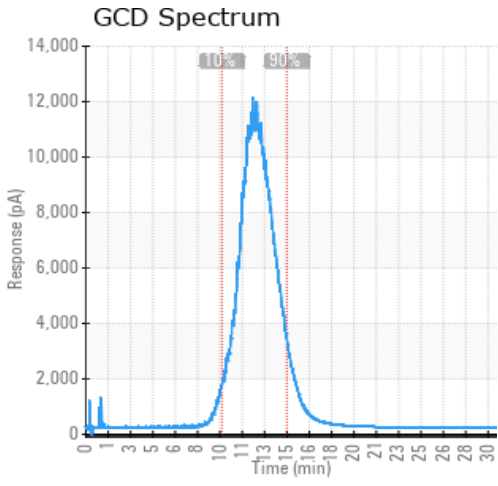
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
04/11/23	05/12/23	0.0d		439 / 226	40.1	34.5	0.03	0.035	736 / 391	819 / 437	914 / 490	0.42
02/28/22	03/10/22	90.0d	down of boiler	457 / 236	87.8	34.6	0.01	0.070	734 / 390	819 / 437	914 / 490	1.27
11/24/21	12/06/21	20.0d	downstream of H808	444 / 229	83.3	34.6	0.03	0.062	729 / 387	817 / 436	913 / 489	2.20
10/02/21	11/04/21	2.0d	PUMP SUCTION	453 / 234	8.1	34.9	0.03	0.034	735 / 391	819 / 437	914 / 490	1.16
02/05/21	02/23/21	14.0d	Pump suction	448 / 231	22.8	34.4	0.03	0.106	737 / 391	820 / 438	914 / 490	0.28
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
04/11/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/28/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/24/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/02/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/05/21	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

02/28/22	Sample results indicate the fluid is in suitable condition for continued service. Please re-sample in 12 months.
11/24/21	Sample was taken after system expansion. Results indicate the fluid is in suitable condition for continued service. Please re-sample in 12 months.
10/02/21	Sample results indicate that the fluid is in suitable condition for continued service. Please re-sample in 12 months
02/05/21	Sample results indicate that the fluid is in suitable condition for continued service. Please re-sample in 12 months

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