

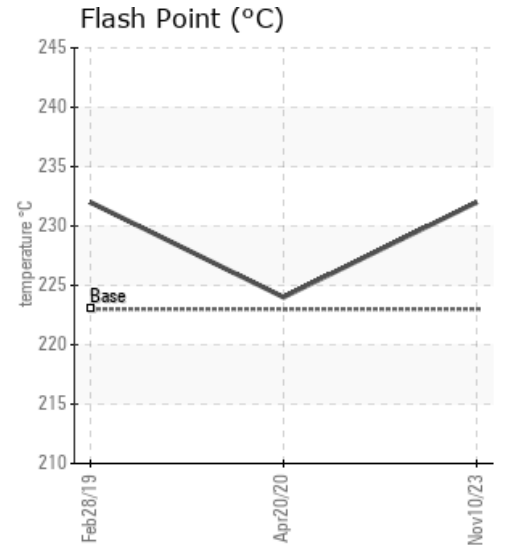
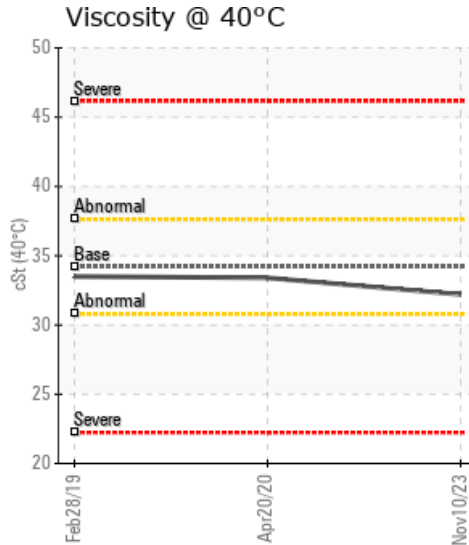
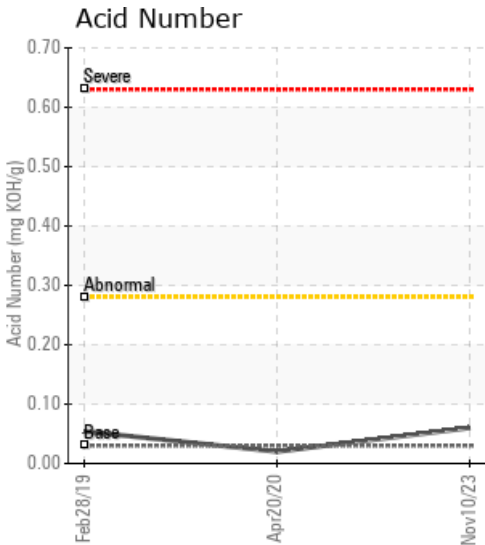
[Petronas / B-8-I/94-G-16] HEATTRANSFER

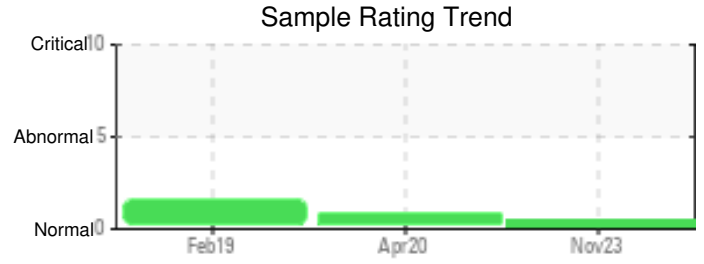
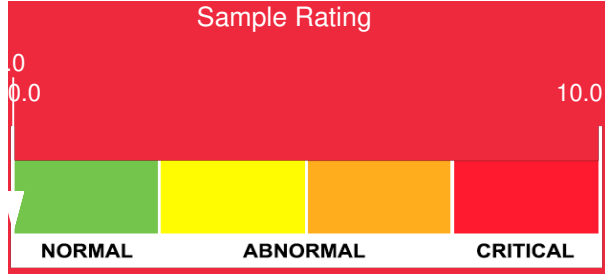
Customer: PTRHTF20174	System Information	Sample Information
Quadra Chemicals 700 4th Ave S.W Suite 470 Calgary, AB T2P 3J4 CA Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 5000 ltr Bulk Operating Temp: 401F / 205C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02597684 Analyst: Clinton Buhler Sample Date: 11/10/23 Received Date: 11/20/23 Completed: 11/27/23 Clinton Buhler Clinton.Buhler@HFSinclair.com

Recommendation: Sample results indicate the fluid is in suitable condition for continued service. Please re-sample in 6 months after system has been back in operation.

Comments:

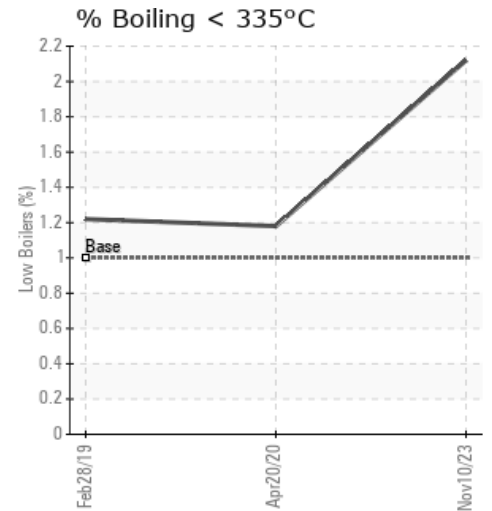
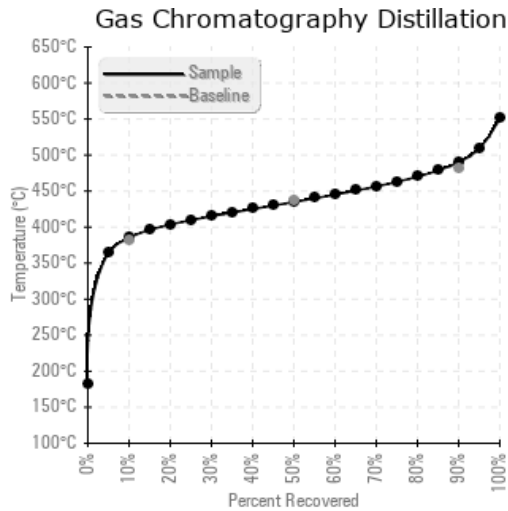
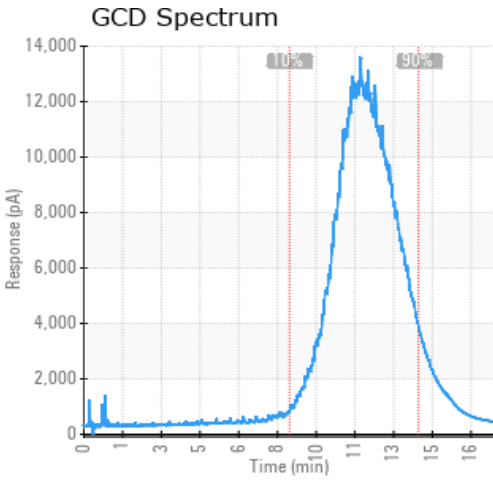
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/10/23	11/20/23	2.0y		450 / 232	4	32.2	0.06	0.027	726 / 385	815 / 435	914 / 490	2.12
04/20/20	05/06/20	3.0y	SURGE CL2004-0402-01	435 / 224	14.0	33.4	0.02	0.087	732 / 389	817 / 436	919 / 493	1.18
02/28/19	03/08/19	2.0y	INLET ON REBOILER	450 / 232	385.0	33.5	0.054	0.062	722 / 383	807 / 431	907 / 486	1.22
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
11/10/23	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/20/20	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
02/28/19	4	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	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

04/20/20	Sample results indicate that the heat transfer fluid is suitable for continued service. Please re-sample in 12 months. (GCD) 90% Distillation Point is marginally high.
02/28/19	Sample results indicate that the heat transfer fluid is suitable for continued service. 385 ppm water may indicate sample port not completely purged during sampling. Venting can help removed water vapor from system. Please re-sample in 6 months and please ensure sample valve and piping purged thoroughly before filling sample container Water contamination levels are marginally high. ppm Water contamination levels are marginally high.

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