

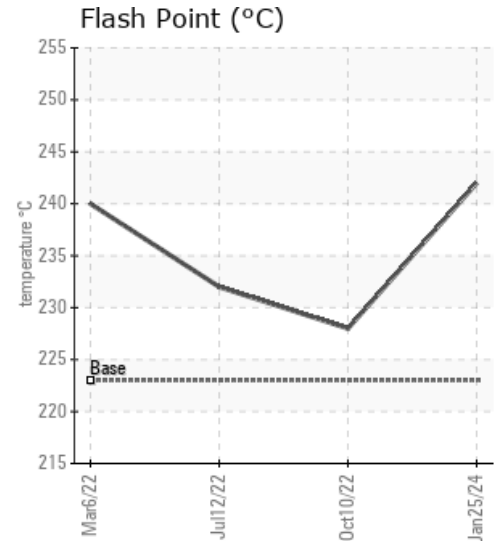
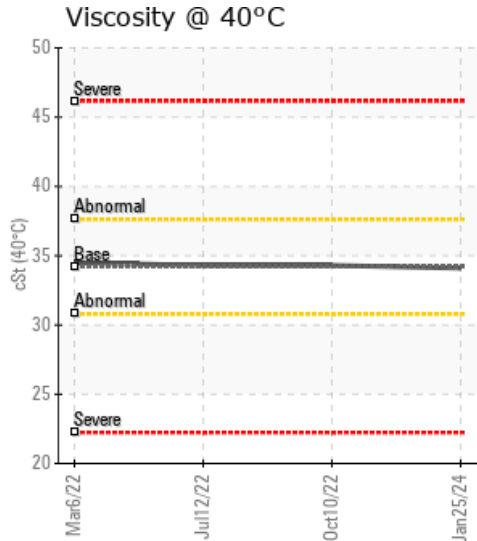
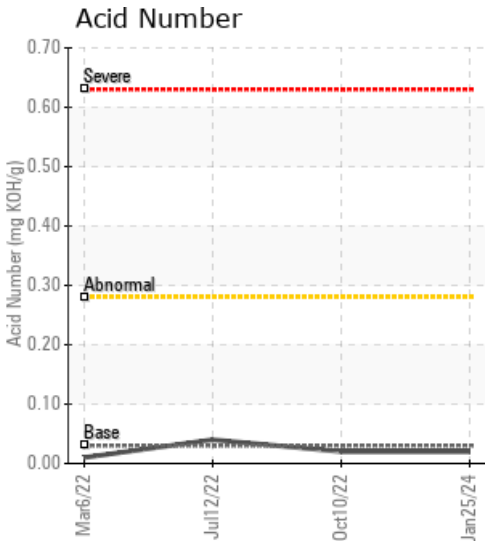
[LSD: 10-14-82-20W6] Crew Energy Wilder

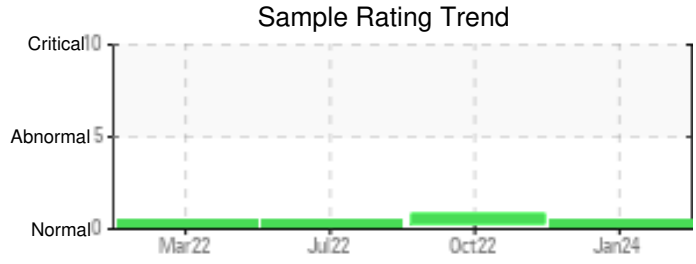
Customer: PTRHTF20175	System Information	Sample Information
QUADRA CHEMICALS 7802 98 STREET CLAIRMONT, AB T0H 0W0 CA Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 38000 ltr Bulk Operating Temp: 399F / 204C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02612653 Analyst: Clinton Buhler Sample Date: 01/25/24 Received Date: 01/31/24 Completed: 02/05/24 Clinton Buhler Clinton.Buhler@HFSinclair.com

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

Comments:

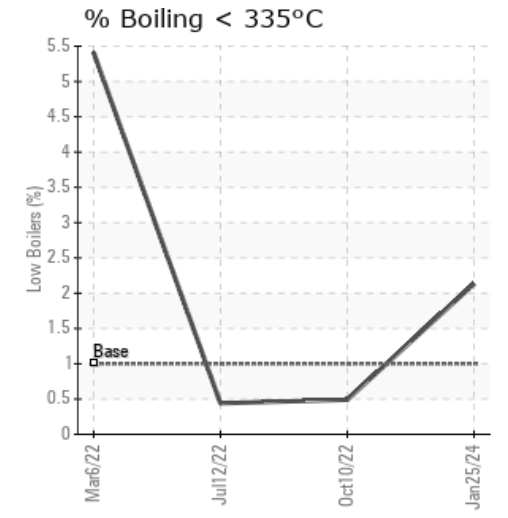
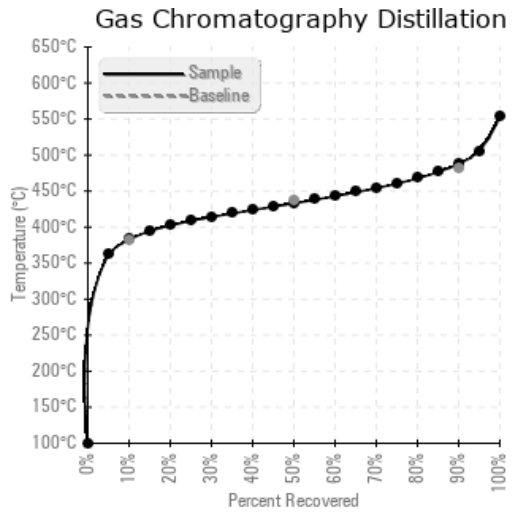
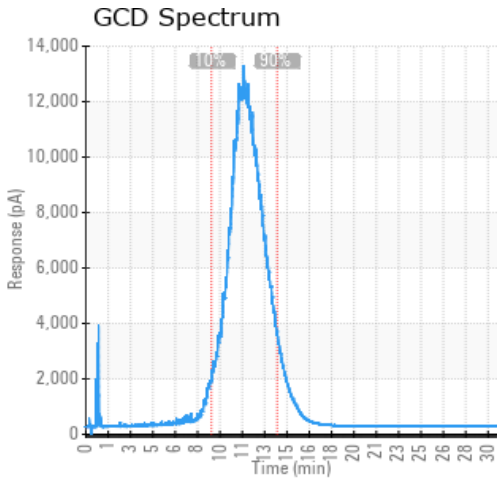
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/25/24	01/31/24	42.0m		468 / 242	23	34.1	0.02	0.052	721 / 383	811 / 433	910 / 488	2.13
10/10/22	11/07/22	13.0m	expansion tank	442 / 228	305.1	34.3	0.02	0.085	731 / 388	813 / 434	909 / 487	0.49
07/12/22	07/25/22	0.0m		450 / 232	308.5	34.3	0.04	0.035	731 / 388	813 / 434	910 / 488	0.44
03/06/22	04/25/22	0.0m		464 / 240	90.7	34.5	0.01	0.036	715 / 380	813 / 434	911 / 489	5.41
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
01/25/24	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/10/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/12/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/06/22	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	
10/10/22	Sample results indicate that the fluid is in suitable condition for continued service. Unless expansion tank sees full system flow, it is advised to sample from the hottest, most turbulent region of the system such as pump discharge which should be more representative than the expansion tank. Please re-sample after 12 months
07/12/22	Sample results indicate that the fluid is in suitable condition for continued service. Low boiling vapor content is much improved from the initial sample. Please re-sample in 12 months
03/06/22	Sample results indicate the fluid is in suitable condition for continued service. Low boiling vapor content is at 5.41%. As part of good maintenance practices, please vent off these vapors and then re-sample in 6 months. Please ensure blanket gas is operational before and after venting of expansion tank.

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