

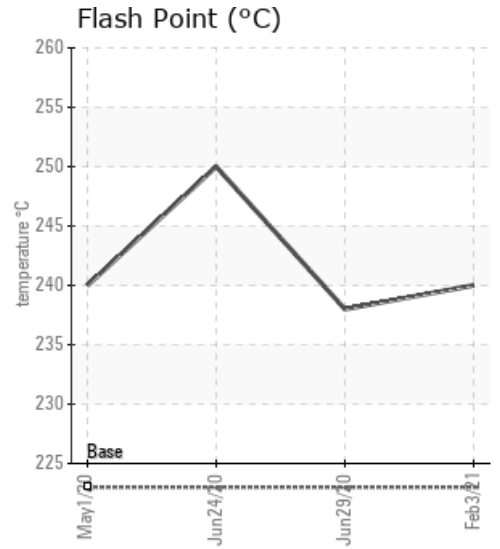
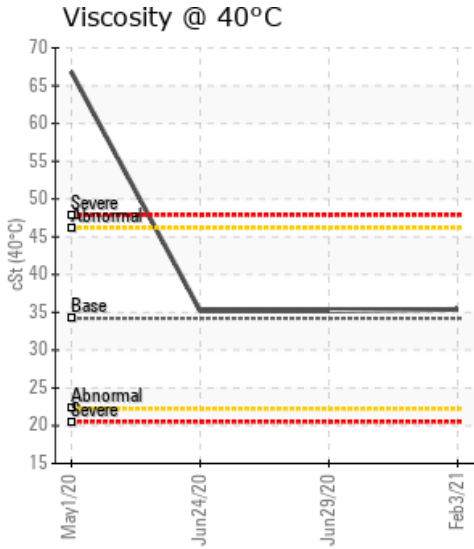
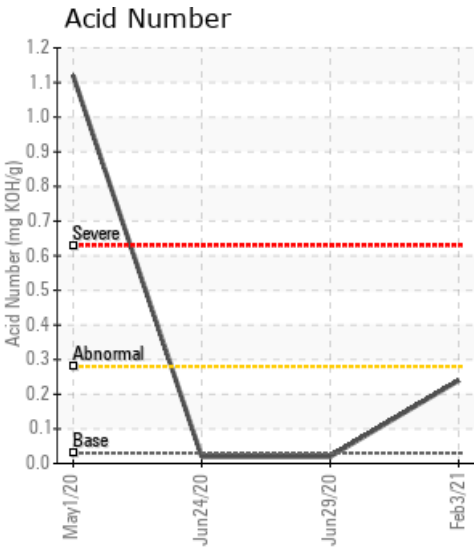
[ASPEN LEAF ENERGY / 10-22-50-26W4] HEAT TRANSFER

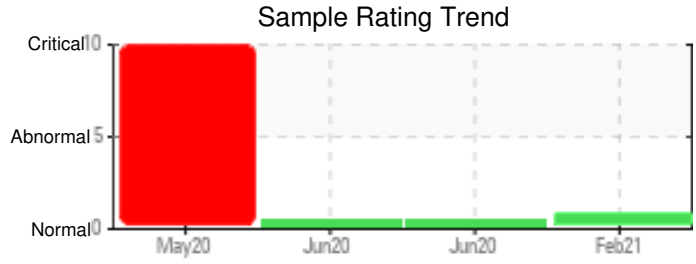
Customer: PTRHTF20174	System Information	Sample Information
Quadra Chemicals 700 4th Ave S.W Suite 470 Calgary, AB T2P 3J4 Canada Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 12069 ltr Bulk Operating Temp: 376F / 191C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: ALCO	Lab No: 02402837 Analyst: Kevin McDermott Sample Date: 02/03/21 Received Date: 02/09/21 Completed: 02/11/21 Kevin McDermott kevin.mcdermott@hollyfrontier.com

Recommendation: Fluid remains in very good condition. No change since the previous sample in July 2020. Suggest submitting samples annually to proactively monitor fluid condition.

Comments:

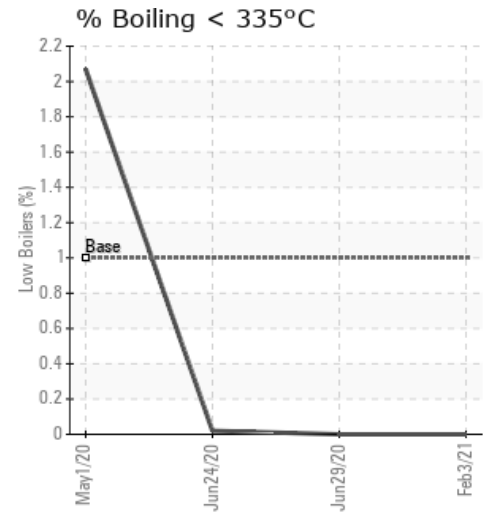
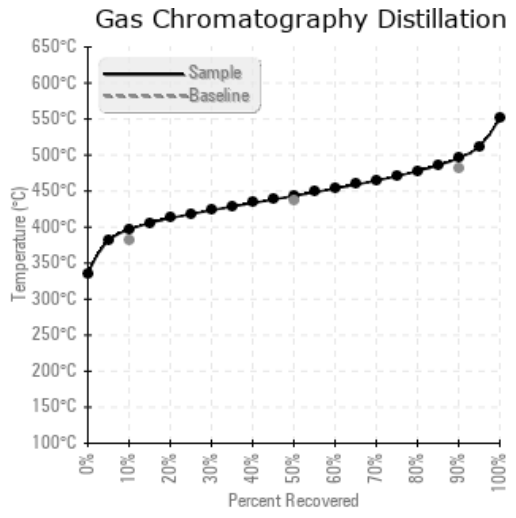
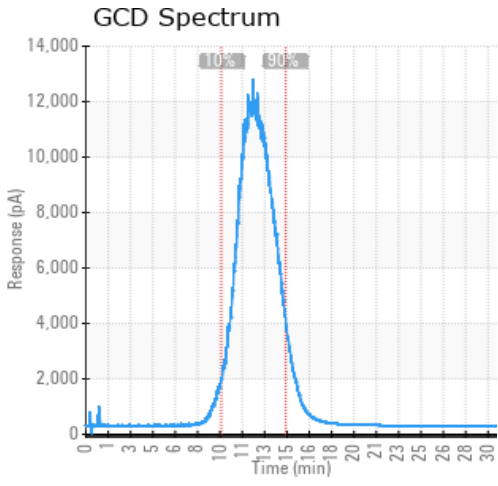
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/03/21	02/09/21	6.0m	Pump suction	464 / 240	119.8	35.4	0.24	0.086	746 / 397	830 / 443	924 / 496	0.00
06/29/20	07/14/20	120.0m		460 / 238	92.0	35.2	0.02	0.047	744 / 396	827 / 442	923 / 495	0.00
06/24/20	07/14/20	0.0m		482 / 250	201.9	35.2	0.02	0.049	744 / 396	827 / 442	923 / 495	0.02
05/01/20	05/05/20	55.0m	SUCTION	464 / 240	192.0	66.8	1.12	2.52	733 / 390	833 / 445	932 / 500	2.07
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
02/03/21	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/29/20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	2
06/24/20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	2
05/01/20	1157	1	0	4	0	0	0	0	0	0	1	0	0	0	0	0	14	0	1	0	2	0	0	1
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

06/29/20	This sample is in good condition, Insolubles are low, Flashpoint is high, TAN is low. GCD is in the range of new oil. Resample in 6 months
06/24/20	This sample is in good condition and OK for continued use. Pentane Insolubles are low and flash is high, GCD is in the range of close to new oil. Resample in 6 months
05/01/20	Fluid is in very poor condition due to severe oxidation. Very high iron content indicates corrosion. The Acid Number, viscosity and solids content also all extremely high. System will require internal cleaning and fluid replacement.

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