

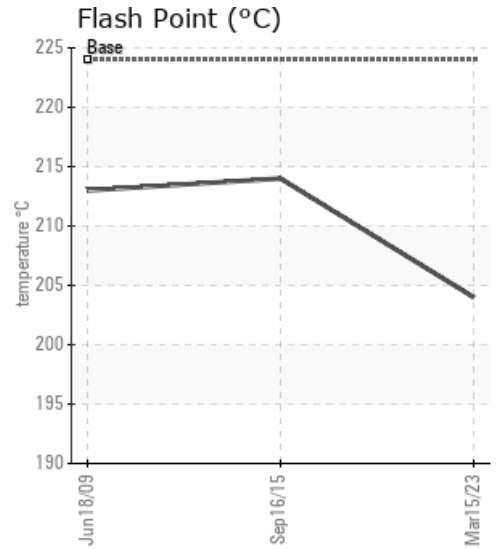
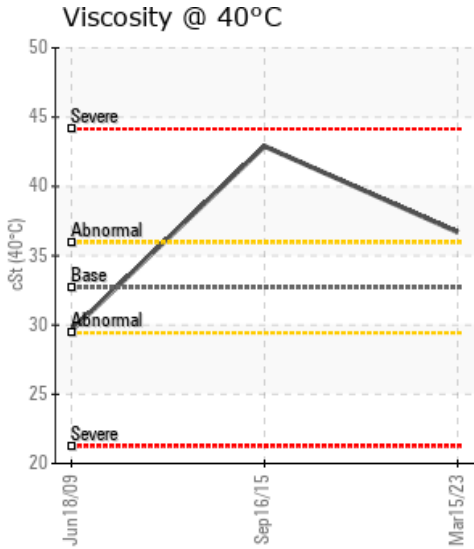
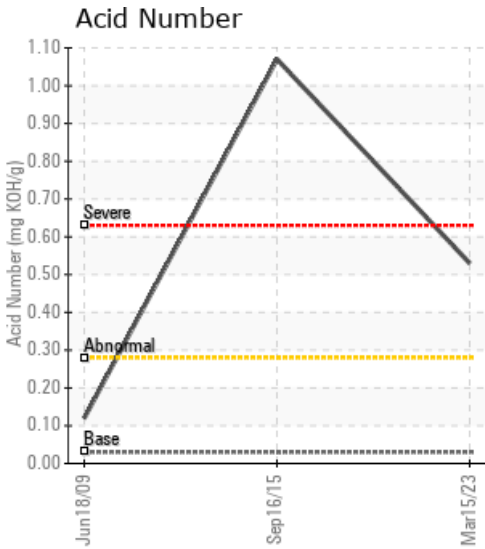
HEAT TRANSFER SYSTEM

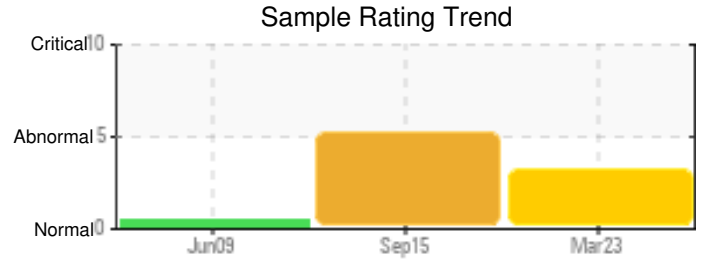
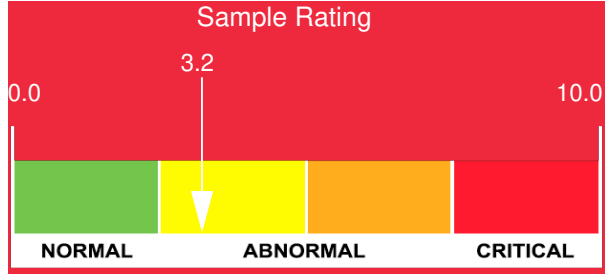
Customer: PTRHTF20069	System Information	Sample Information
SOPREMA 44955 YALE ROAD WEST CHILLIWACK, BC V2R 4H3 CANADA Attn: Ian Clarke Tel: (604)997-4675 E-Mail: iclarke@soprema.ca	System Volume: 8400 ltr Bulk Operating Temp: 527F / 275C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: FULTON THERMAL	Lab No: 02549456 Analyst: Ray Rolston Sample Date: 03/15/23 Received Date: 04/03/23 Completed: 04/10/23 Ray Rolston Ray.Rolston@HFSinclair.com

Recommendation: Oil age, system age and operating temperature are not listed. Viscosity of 36.7 cSt @ 40 C is elevated. Acid Number is flagged caution at 0.53 mg KOH/g. IBP (Initial Boiling Point) is low suggesting the presence of thermally cracked low boilers. Pentane Insolubles (solids content) of 1.18wt% is above the condemning guideline of 0.5wt%. All of these values are lower than the previous test in Sep 2015. Recommend filtration to reduce sediment content and evacuate light ends (low boilers) if this can be accomplished safely. Re-sample in 6 months to monitor.

Comments: Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high. Visc @ 40°C is abnormally high.

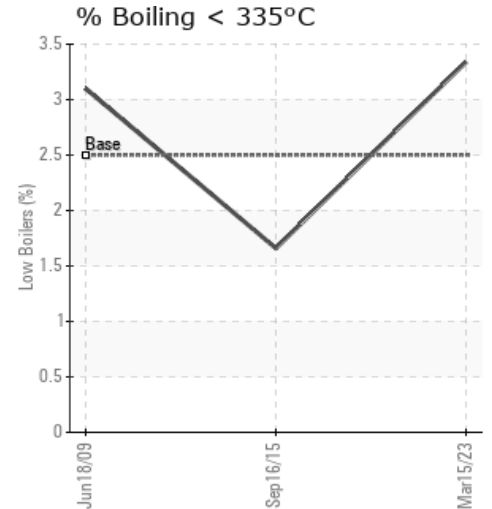
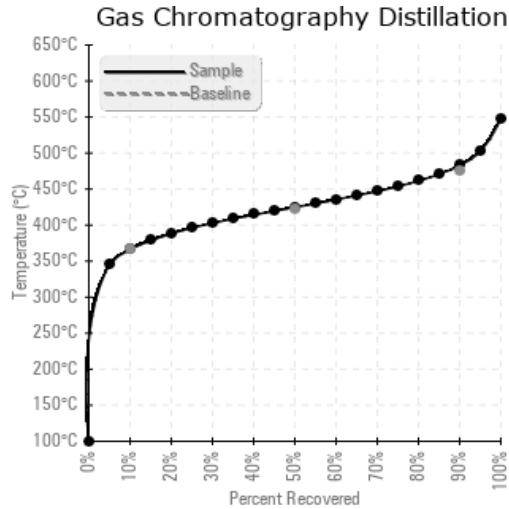
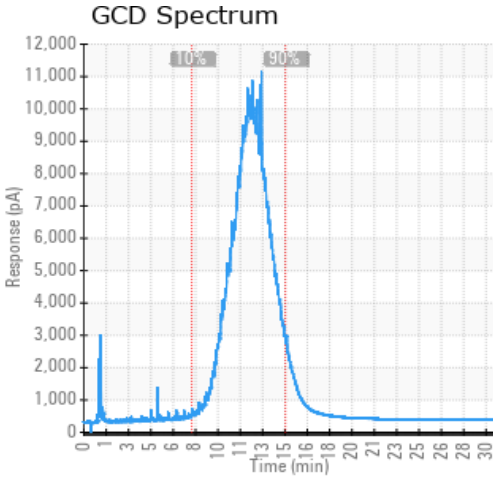
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/15/23	04/03/23	0.0y		399 / 204	207.8	36.7	0.53	1.18	691 / 366	797 / 425	901 / 483	3.34
09/16/15	09/23/15	16.0y	SECONDARY LOOP PIPE	417 / 214	18.8	42.9	1.07	2.69	696 / 369	796 / 424	914 / 490	1.66
06/18/09	06/18/09			415 / 213	65	29.6	0.12	0.08	682 / 361		887 / 475	3.1
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





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
03/15/23	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	43	0
09/16/15	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	0
06/18/09	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	0
Baseline Data			0	0						0			0	0					0				270	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



Historical Comments	
09/16/15	The acid number and the Pentane Insolubles along with the viscosity are elevated indicating an increase in the oxidation rate. Although the 90% distillation is slightly high overall the distillation looks normal. All other indicators such as wear, flash point etc are all normal and look very good. Recommend that another sample be done in 6 months to determine if the oxidation rate is progressing. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. Visc @ 40°C is abnormally high. (GCD) 90% Distillation Point is marginally high.
06/18/09	

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