

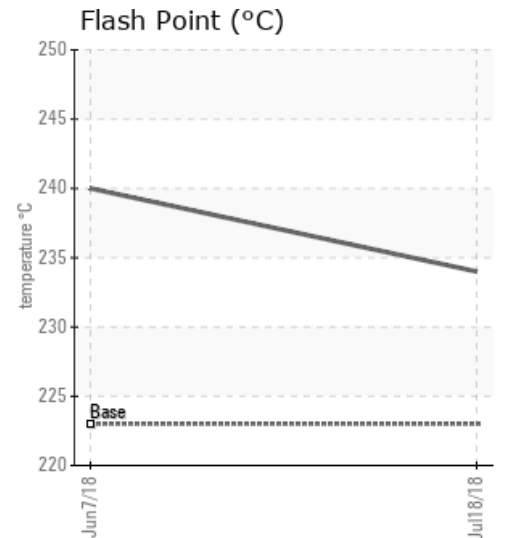
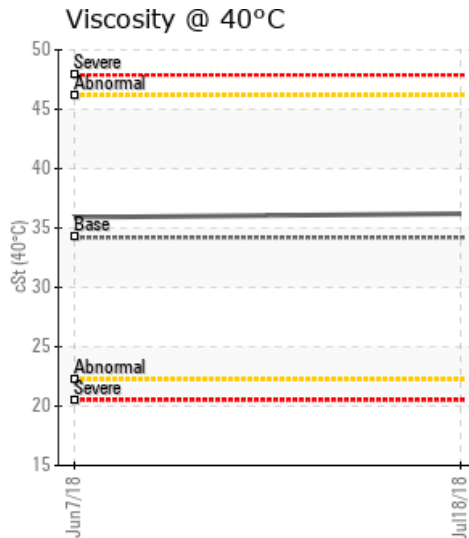
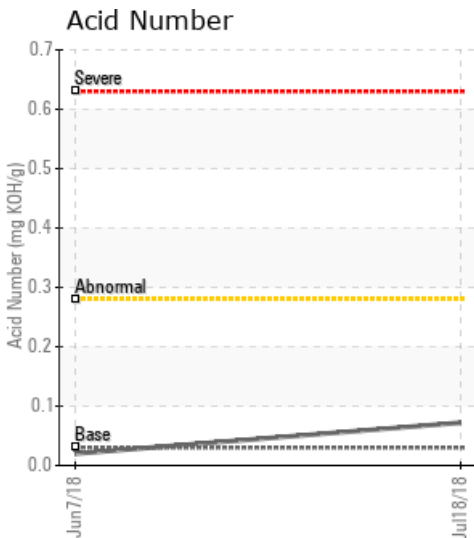
HEAT TRANSFER

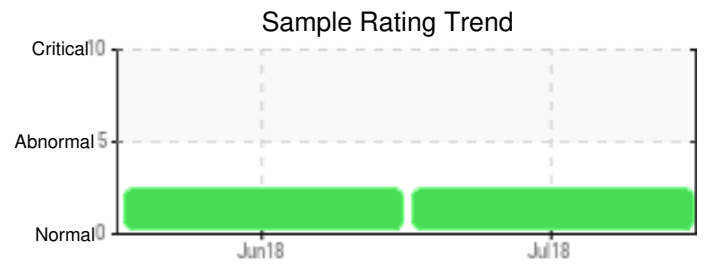
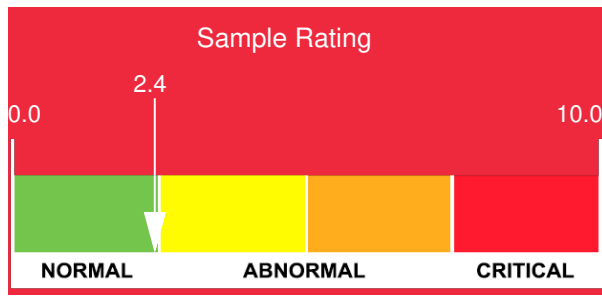
Customer: PTRHTF30116	System Information	Sample Information
H & H CONSTRUCTION INC 49 PORTAGE ROAD PETAWAWA, ON K8H 2W8 Canada Attn: Andrew F Tel: (613)687-8154 E-Mail:	System Volume: 2000 ltr Bulk Operating Temp: 355F / 179C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02230158 Analyst: Pierre Castagne Sample Date: 07/18/18 Received Date: 07/24/18 Completed: 08/20/18 To discuss this report contact Pierre Castagne at 905-285-8278

Recommendation: Calcium & sulfur level are very high. Sodium level are high. Verified the procedure of transferring the heat transfer oil. Although the parameter GCD @10% & GCD @90% are normal, the actual curve shows cracking of the oil.

Comments: Calcium ppm levels are severely high. Sodium ppm levels are abnormally high.

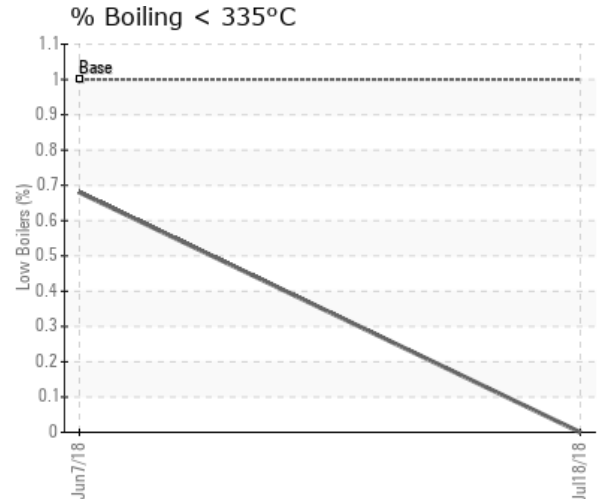
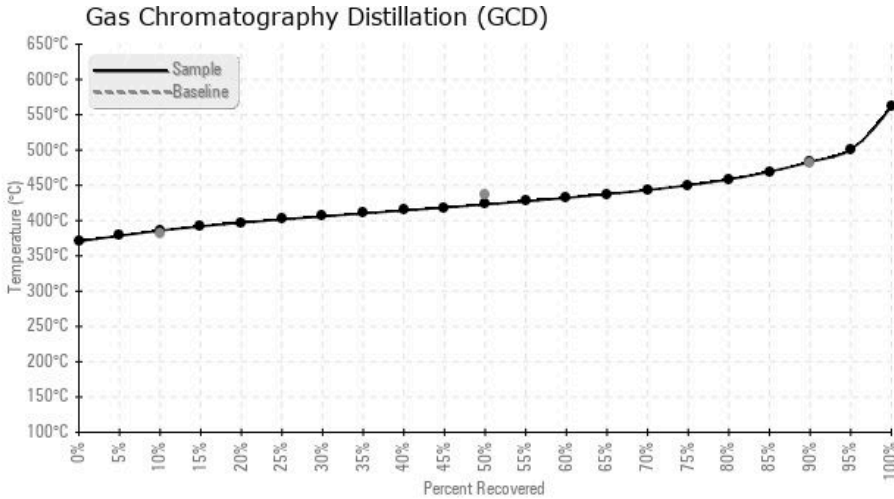
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/18/18	07/24/18	8w		453 / 234	71.2	36.2	0.072	0.119	726 / 386	793 / 423	902 / 483	0.00
06/07/18	06/13/18	7w		464 / 240	87.5	35.9	0.02	0.108	725 / 385	810 / 432	913 / 490	0.68
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	
07/18/18	1	0	0	0	0	1	0	0	0	0	0	28	0	0	0	0	0	0	0	0	1	93	0	3	1
06/07/18	2	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	1	132	0	3	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

06/07/18	Calcium & Sulfur PPM are severely high. Sodium level are abnormally high. Investigate, source of contamination. Possible cause, transfer method to top-up heat transfer fluid using a container or pump used for other top-up fluid. Calcium ppm levels are severely high. Sodium ppm levels are abnormally high.

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