

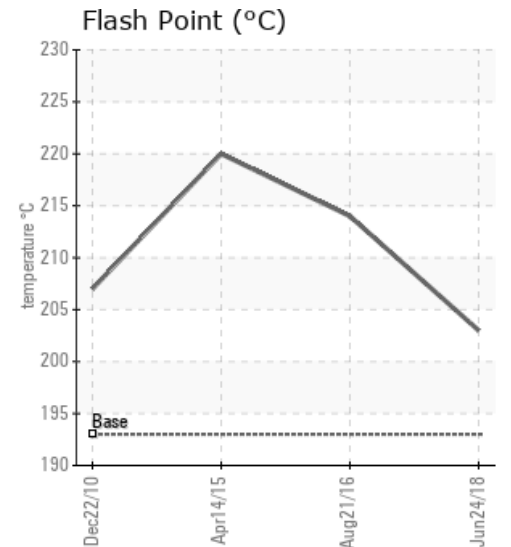
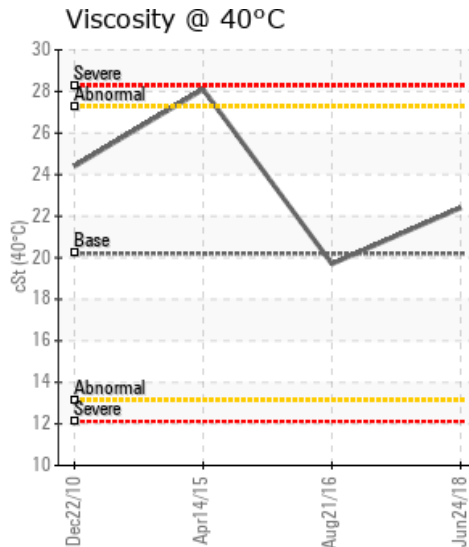
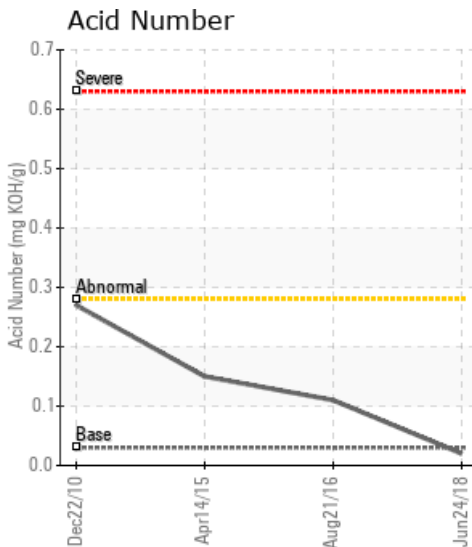
ATLANTIC STATES

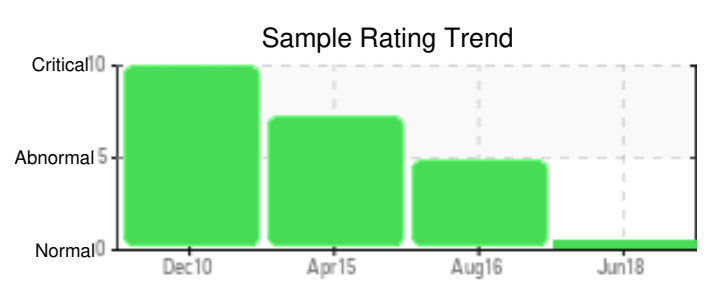
Customer: PTRHTF10041	System Information	Sample Information
KUTTNER LLC. 211 N FRANKLIN ST PORT WASHINGTON, WI 53074 USA Attn: DAVID ZINKY Tel: (262)284-4483 E-Mail: d.zinky@kuttnera.com	System Volume: 7000 gal Bulk Operating Temp: 540F / 282C Heating Source: Blanket: Fluid: MOBIL MOBILTHERM 603 Make: WUERZ	Lab No: 02235063 Analyst: Neil Buchanan Sample Date: 06/24/18 Received Date: 08/22/18 Completed: 08/27/18 To discuss this report contact Neil Buchanan at 612-619-6571

Recommendation: No reference sample. Fluid changed 01/28/2018 viscosity, acid number, flash point, insolubles and distillation at acceptable levels resample at normal intervals

Comments:

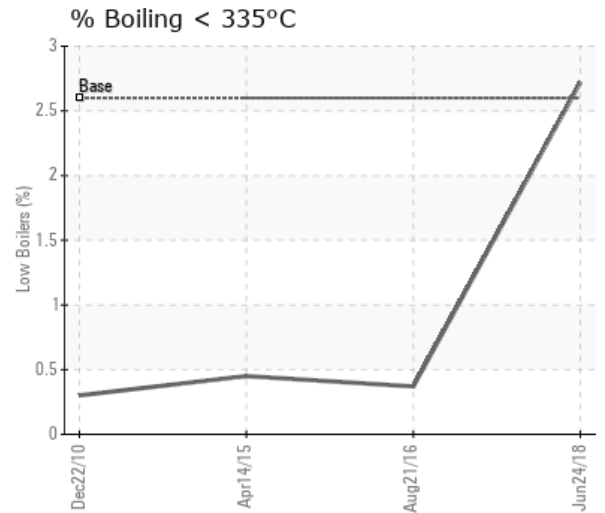
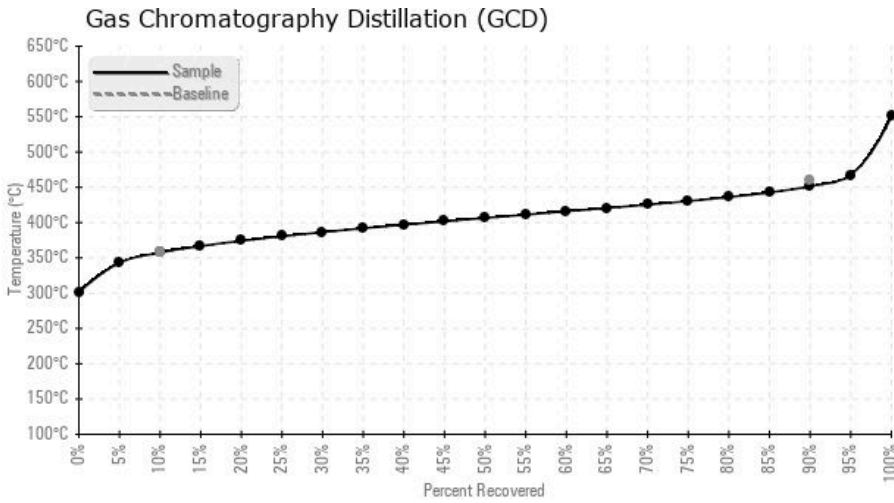
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/24/18	08/22/18	0m	PUMP INLET	397 / 203	80.7	22.4	0.02	0.058	675 / 357	764 / 407	845 / 452	2.72
08/21/16	09/19/16	18m	PUMP INLET	417 / 214	130.5	19.7	0.11	0.092	710 / 376	791 / 421	877 / 469	0.37
04/14/15	06/05/15	2m	PUMP INLET	428 / 220	199.7	28.1	0.15	0.061	709 / 376	791 / 422	870 / 465	0.45
12/22/10	01/10/11		PUMP INLET	405 / 207	430	24.4	0.27	0.070	704 / 374	774 / 412	847 / 453	0.301
Baseline Data				379 / 193		20.2	0.03		676 / 358		858 / 459	2.6





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
06/24/18	15	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	15	0	0	1
08/21/16	4	0	0	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	57	0	2	1
04/14/15	19	0	0	0	0	0	1	0	0	0	0	45	0	0	0	0	0	0	0	0	64	0	2	1
12/22/10	11	0	0	0	0	0	0	0	0	0	0	88	0	0	0	0	0	0	0	0	89	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	
08/21/16	No reference fluid available. Viscosity at 40C appears low compared to previous samples. High Sodium and calcium contamination. TAN is acceptable. COC Flash Point is severely high. Calcium ppm levels are severely high. Visc @ 40°C is severely low. Sodium ppm levels are abnormally high.
04/14/15	Baseline and typical values not available. Product unknown so cannot make a complete diagnosis. TAN, Flash Pt, Insolubles, H2O, Fe, GCD all appear good. Na and Ca contamination. Sodium ppm levels are severely high. Calcium ppm levels are severely high.
12/22/10	The oil has some moisture in it, not dramatic but enough to be heard and cause some issues in some systems depending on the design. The oil also contains minerals like sodium and calcium, maybe salt water. Please try to prevent water ingress. Re-sample in 6-9 months.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.