

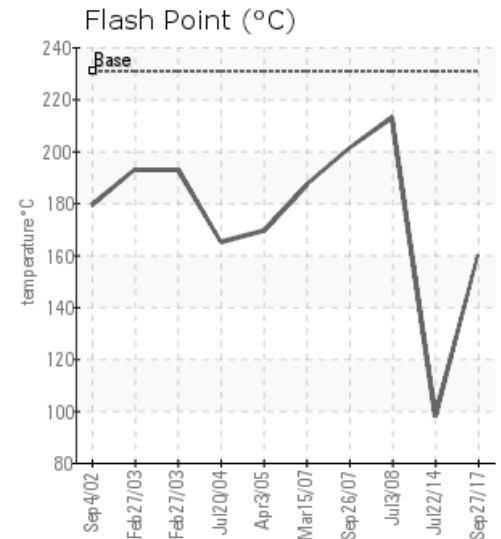
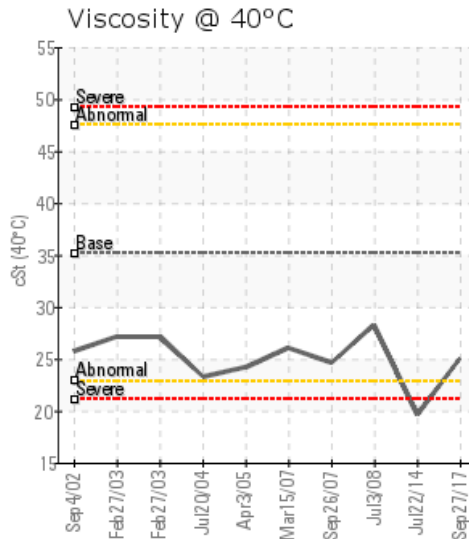
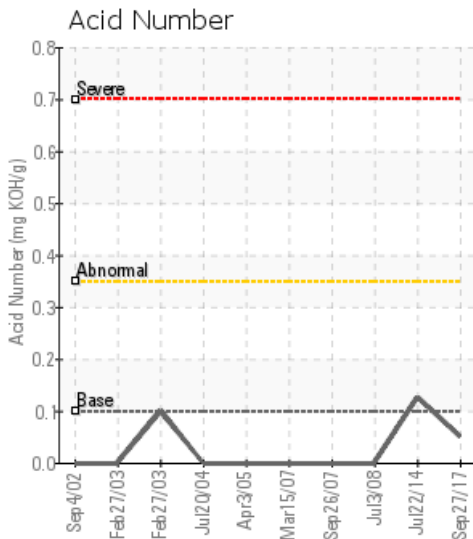
## POLYBUTYLENE PLANT (AREA 100)

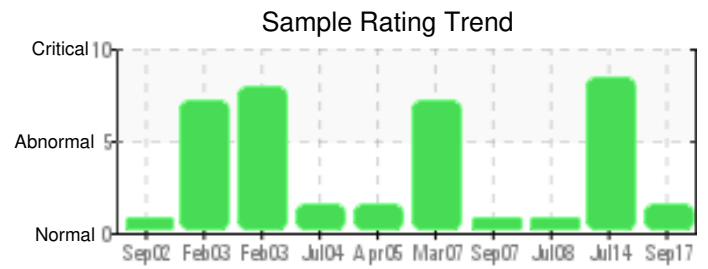
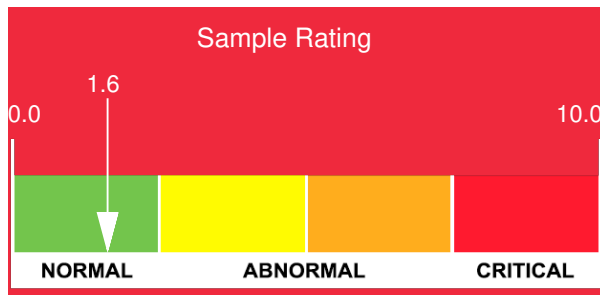
Customer: PTRHTF10087	System Information	Sample Information
LUBRIZOL CORPS 41 TIDAL RD. DEER PARK, TX 77536 USA Attn: KYLE TRAHAN Tel: (832)260-7025 E-Mail: kyle.trahan@lubrizol.com	System Volume: 10000 gal Bulk Operating Temp: 565F / 296C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make:	Lab No: 02174330 Analyst: Frank Hayes Sample Date: 09/27/17 Received Date: 10/06/17 Completed: 11/22/17 To discuss this report contact Frank Hayes at (713)981-6464

Recommendation: The fluid is suitable for continued use. There are clear signs of thermal degradation and additive depletion. Viscosity has reduced from ISO 32 to ISO 22. Low Boilers have increased. Flash Point has decreased. Pentane insoluble have increase. Phosphorus has decreased. Even though the symptoms of thermal degradation are evident. The fluid is probably only halfway to condemning. Recommend venting of low boilers, as a minimum action. Only to increase the longevity of the bulk fluid, a 20% drain and refill during the next system shutdown should help.

Comments: COC Flash Point is severely low.

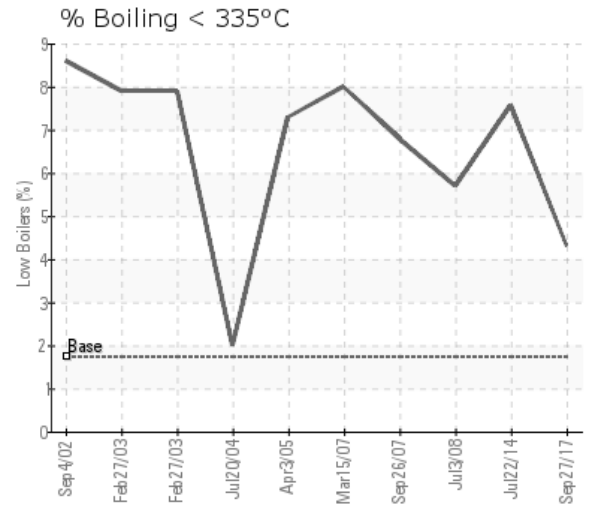
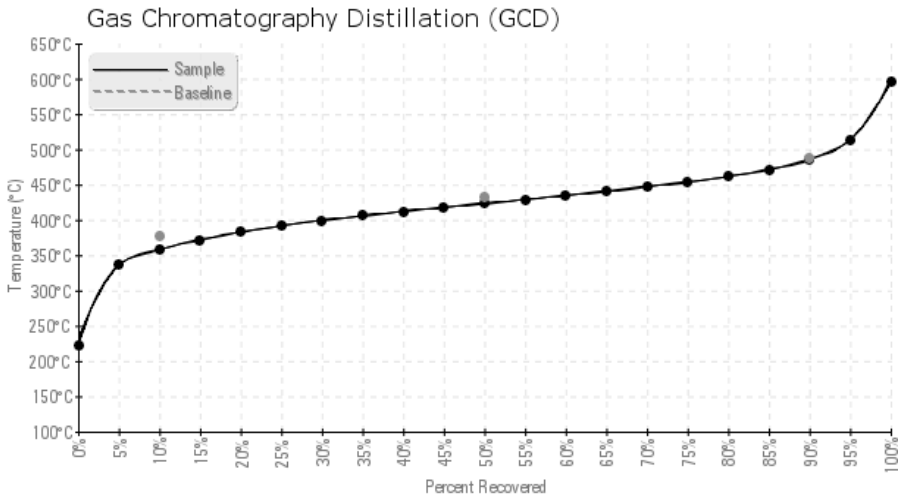
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40C)	Acid Number (AN)	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335C
	mm/dd/yy	yrs		F/C	ppm	cSt	mg/KOH/g	%Wt	F/C	F/C	F/C	%
09/27/17	10/06/17	---		320 / 160	8	25.0	0.051	0.14	676 / 358	794 / 423	906 / 486	4.3
07/22/14	08/05/14	13	P-82 HEATER	208 / 98	29	19.6	0.127	0.11	652 / 345	785 / 418	891 / 477	7.6
07/03/08	07/03/08	---		415 / 213	22	28.3	0		689 / 365		923 / 495	5.7
09/26/07	10/24/07	---		394 / 201	67	24.6	0		673 / 356		901 / 483	6.8
03/15/07	03/20/07	---		369 / 187	64	26	0		660 / 349		900 / 482	8.0
04/03/05	04/25/05	---		336 / 169	43	24.2	0		729 / 387		892 / 478	7.3
<b>Baseline Data</b>				448 / 231	0	35.20	.1	0	712 / 378	810 / 432	910 / 488	1.8





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
09/27/17	6	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	20	0
07/22/14	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	0
07/03/08	90	0	17	0	6	0	1	0	0	0	1	0		0	0		1			0	11	0	52	0
09/26/07	34	0	5	0	2	0	0	0	0	0	0	0		0	0		0			0	3	0	27	0
03/15/07	23	4	2	3	0	0	0	0	0	0	11	64		0	0		0		79	2	11	0	31	7
04/03/05	39	0	7	0	3	0	0	0	0	0	0	0		0	0		0			0	4	0	32	0
<b>Baseline Data</b>																							280	10

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



Historical Comments	
07/22/14	The fluid viscosity and the flash point decreased by nearly 50% compared to fresh oil, which is caused by a high amount of low boilers that need to be vented. Considering the age of the fluid and your expertise in venting low boilers out of the fluid, we suggest to perform both a 30-40% sweetening (partial dump and addition) as well as venting of the low boilers. We invite you to take samples a day after each major venting or fluid replacement operation to measure effectiveness. COC Flash Point is severely low. Visc @ 40°C is severely low. (GCD) 10% Distillation Point is marginally low. (GCD) 90% Distillation Point is marginally low.
07/03/08	
09/26/07	
03/15/07	
04/03/05	

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