

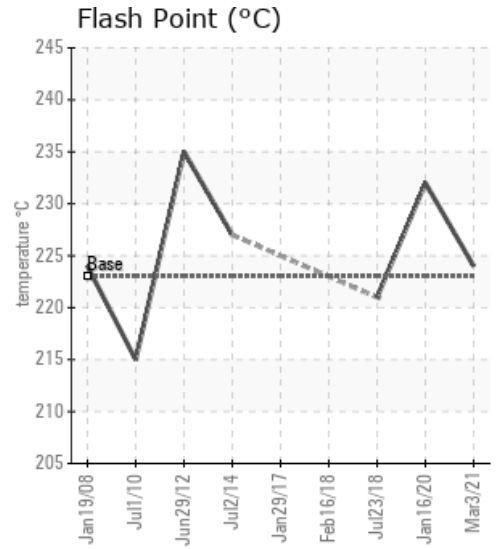
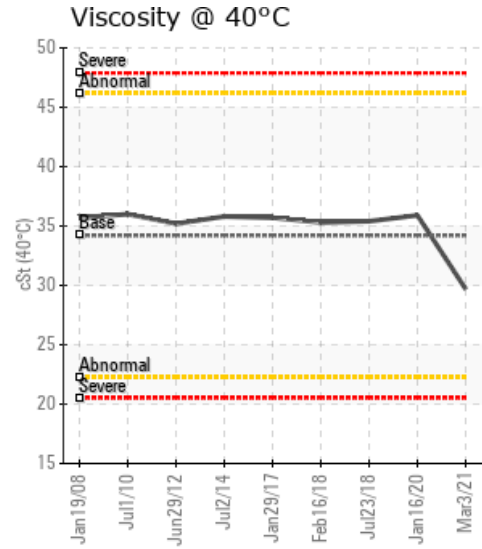
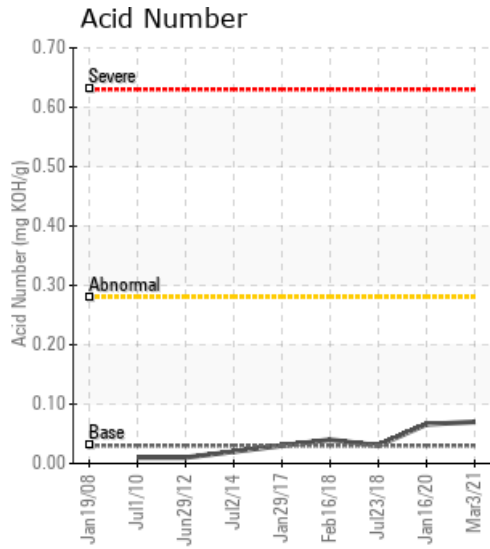
EAST SYSTEM

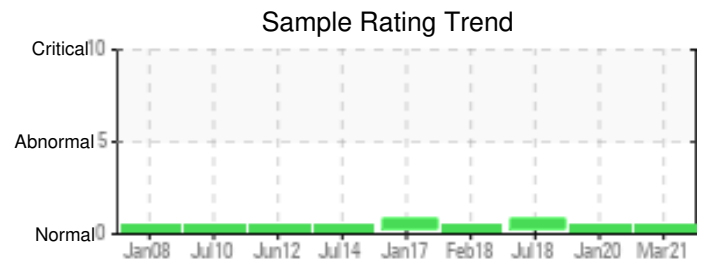
Customer: PTRHTF10182	System Information	Sample Information
American Cast Iron Pipe Co. 1501 31st Avenue North Birmingham, AL 35207 USA Attn: Jeremy Mowry Tel: (205)325-7905 E-Mail: jmowry@american-usa.com	System Volume: 10000 gal Bulk Operating Temp: 470F / 243C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: KUTTNER	Lab No: 02419434 Analyst: Jake Finn Sample Date: 03/03/21 Received Date: 05/06/21 Completed: 05/10/21 Jake Finn jake.finn@hollyfrontier.com

Recommendation: Results indicate fluid is in excellent condition and is suitable for continued use. Please resubmit for testing in one year.

Comments: N/A

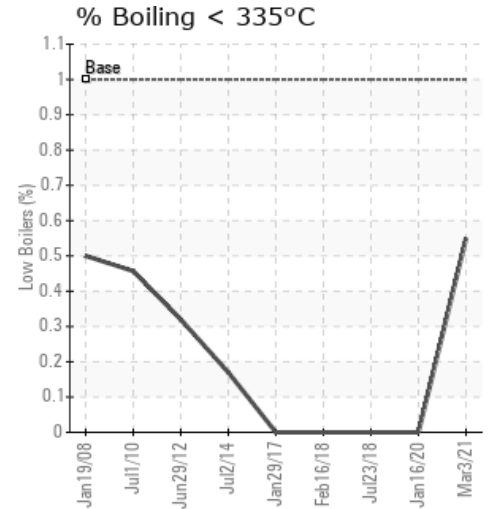
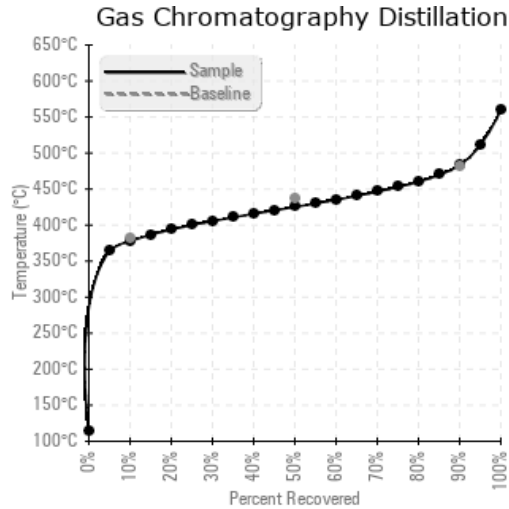
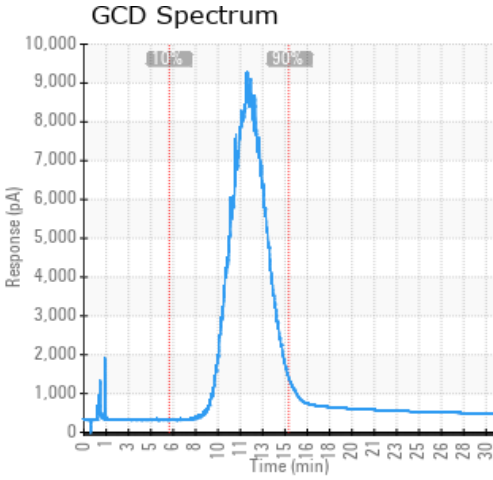
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/03/21	05/06/21	13.0y	Pump outlet	435 / 224	11.6	29.7	0.07	0.042	712 / 378	797 / 425	902 / 483	0.55
01/16/20	02/03/20	12.0y		450 / 232	8.0	35.9	0.066	0.062	711 / 377	799 / 426	890 / 477	0.00
07/23/18	08/16/18	10.5y	PUMP OUTLET	430 / 221	2.2	35.4	0.030	0.025	717 / 381	794 / 424	877 / 469	0.00
02/16/18	05/24/18	0.0y			29.0	35.3	0.04	0.058	711 / 377	799 / 426	909 / 487	0.00
01/29/17	05/24/18	0.0y			21.2	35.7	0.03	0.037	708 / 376	778 / 414	871 / 466	0.00
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
03/03/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01/16/20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/23/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/16/18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3
01/29/17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3
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

01/16/20	Oil is suitable for continued use. Please resubmit for testing in 12 months.No abnormalities noted.
07/23/18	Fluid is suitable for continued use. (GCD) 90% Distillation Point is marginally low. 'Venting' the system could bring this value up to normal. Light debris noticed by the lab. Please change any system filters and/or filter the system fluid safely during any shutdowns with a portable kidney-loop filtration system.
02/16/18	Fluid is suitable for continued use. Please re-submit annual sample of Petro-therm in May 2019. During a safe shutdown opportunity the fluid can be filtered with a kidney-loop filtration system to clean up any contamination. If system has any filters, please schedule them to be changed.Light Debris noticed in sample of fluid
01/29/17	Fluid is suitable for continued use. 'Venting' the system may improve the 90% distillation point. Changing system filters or filtering fluid with a kidney loop system may reduce any 'debris' found in sample. Please include the age of the fluid and the age of the heat transfer system on next year's label. Re-submit fluid sample in May 2019Light debris seen in fluid sample. (GCD) 90% Distillation Point is abnormally low.

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