

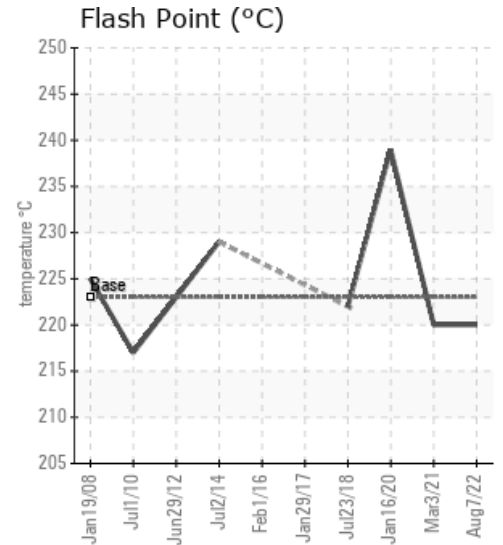
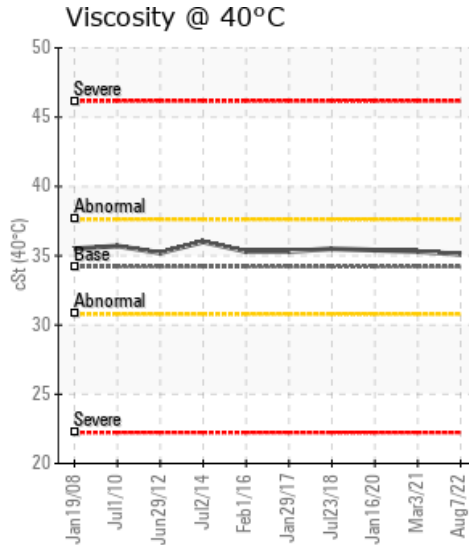
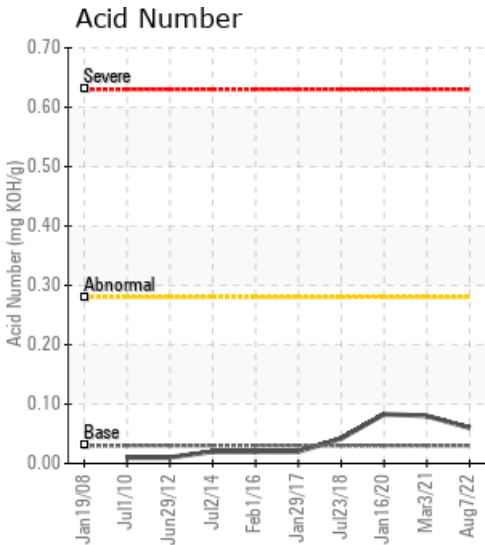
[JEREMY MOWRY] WEST SYSTEM

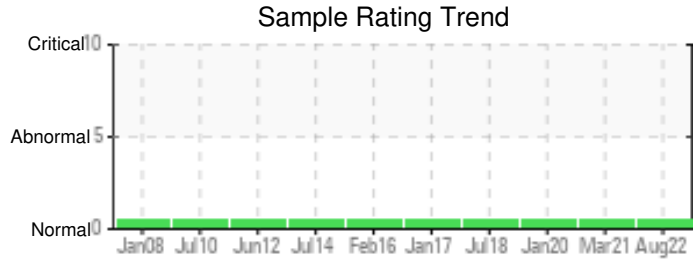
Customer: PTRHTF10182	System Information	Sample Information
American Cast Iron Pipe Co. 1501 31st Avenue North Birmingham, AL 35207 USA Attn: Jeremy Mowry Tel: (205)325-7905 E-Mail: jmowry@american-usa.com	System Volume: 10000 gal Bulk Operating Temp: 470F / 243C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: KUTTNER	Lab No: 02509203 Analyst: Jake Finn Sample Date: 08/07/22 Received Date: 09/06/22 Completed: 09/19/22 Jake Finn jake.finn@HFSinclair.com

Recommendation: Sample indicates no signs of wear, contamination or fluid degradation. This fluid is suitable for continued use, please resample and submit for testing in 12 months.

Comments: N/A

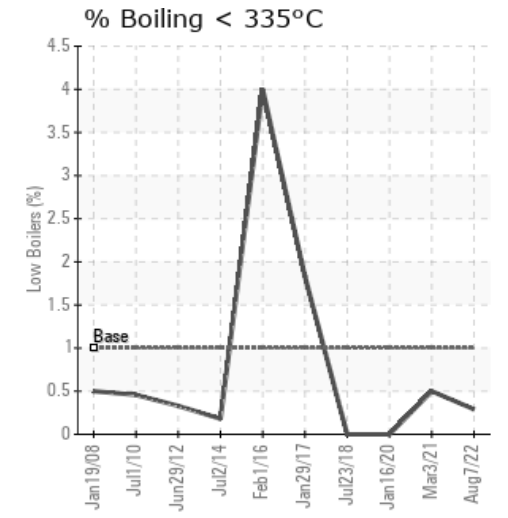
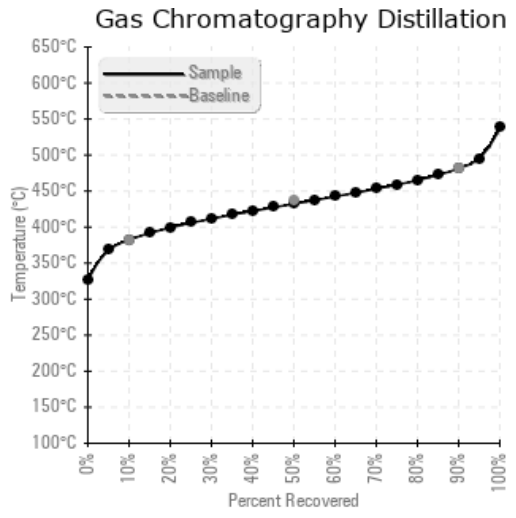
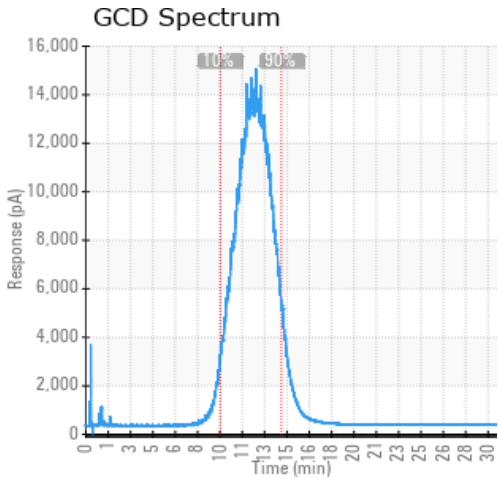
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
08/07/22	09/06/22	14.0y		428 / 220	22.3	35.1	0.06	0.021	720 / 382	810 / 432	899 / 481	0.29
03/03/21	05/06/21	13.0y	Pump Outlet	428 / 220	12.2	35.3	0.08	0.039	713 / 378	798 / 426	900 / 482	0.50
01/16/20	02/03/20	12.0y		462 / 239	8.8	35.4	0.083	0.083	712 / 378	801 / 427	891 / 477	0.00
07/23/18	08/16/18	10.5y	PUMP OUTLET	432 / 222	1.7	35.5	0.042	0.035	713 / 378	802 / 428	891 / 477	0.00
01/29/17	05/24/18	0.0y			10.7	35.3	0.02	0.036	693 / 367	797 / 425	922 / 495	1.83
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
08/07/22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	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	4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4	1	0	0	3
01/29/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	
03/03/21	Results indicate fluid is in excellent condition and is suitable for continued use. Please resubmit for testing in one year.N/A
01/16/20	Oil is suitable for continued use. Please resubmit for testing in 12 months.Very Lite sand/dirt noted by lab.
07/23/18	Fluid is suitable for continued use. Please re-submit next scheduled sample in July 2019Some light/moderate debris noticed in the fluid by the lab. If the system has any filters, changing them is recommended; if the fluid in the system can be filtered safely during any system shutdowns with a kidney-loop filtration system that would be beneficial.
01/29/17	Fluid is suitable for continued use. Please re-sample in May, 2019. Fluid could be filtered during a safe time to reduce the light debris seen in the sample. Please include the time on the Petrotherm fluid and the time on the system during the next sample submission.(GCD) 90% Distillation Point is marginally high. This value can be mitigated by 'venting' the system. Some very light debris seen in the sample. (GCD) 90% Distillation Point is marginally high.

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