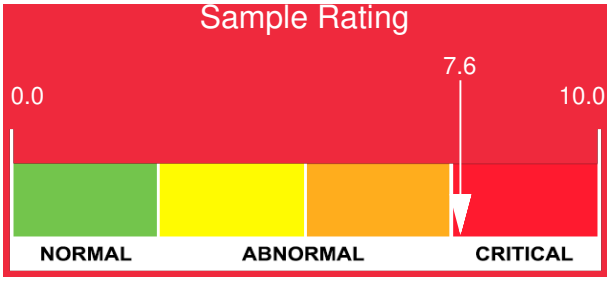
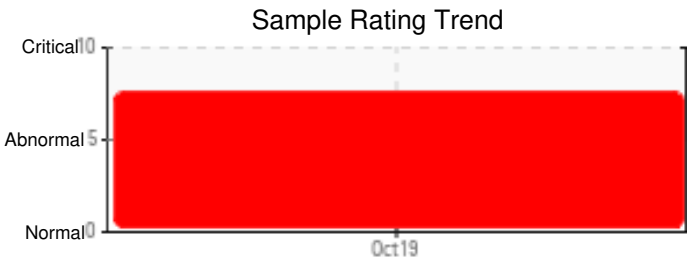




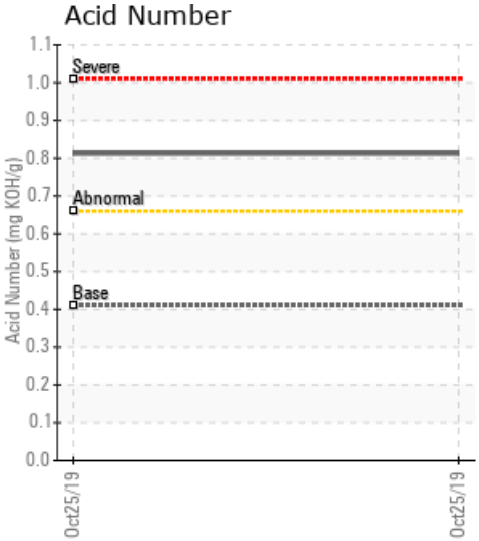
DEAST

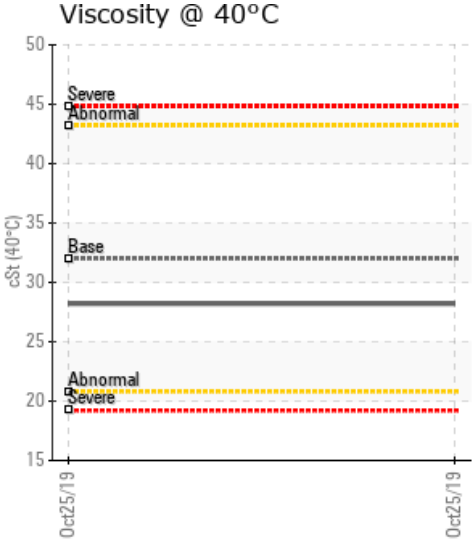
Customer: PTRHTF30107	System Information	Sample Information
D-CONSTRUCTION 16805 QUARRY RD MORRIS, IL 60450 USA Attn: Chris Lenzie Tel: (815)405-6831 E-Mail: clenzie@sandenoinc.com	System Volume: 600 gal Bulk Operating Temp: 340F / 171C Heating Source: Blanket: Fluid: HEAT TRANSFER FLUID ISO 32 Make:	Lab No: 02322036 Analyst: Yvette Trzcinski Sample Date: 10/25/19 Received Date: 11/22/19 Completed: 12/03/19

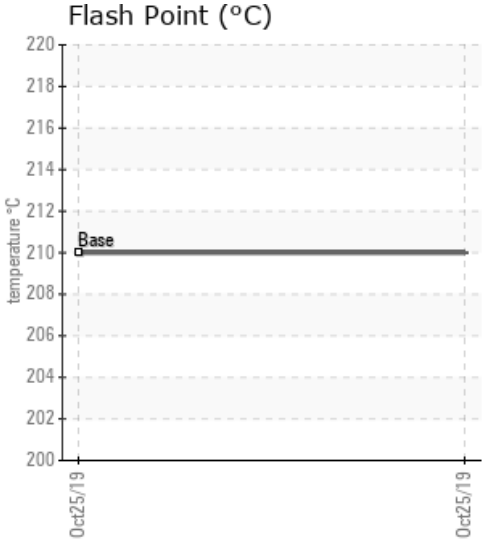
Recommendation: Fluid shows signs of degradation - acid number is high the pentane insoluble are high and there are low boilers in the system that can cause pump cavitation if not removed. There also seems to be contamination of the heat transfer system with either hydraulic or engine oil due to the zinc contamination. Recommend venting the system to remove low boilers for this fluid now and consider scheduling a system changeout - drain, clean and recharge of the system

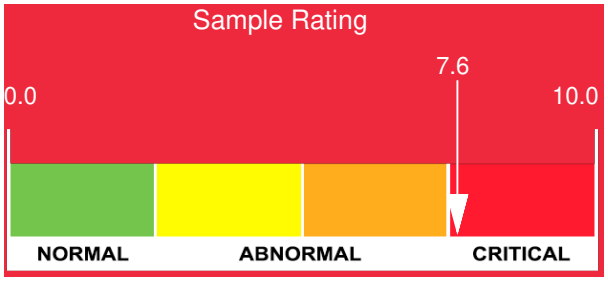
Comments: Pentane Insolubles levels are abnormally high. Zinc ppm levels are severely high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. (GCD) 50% Distillation Point is marginally low.

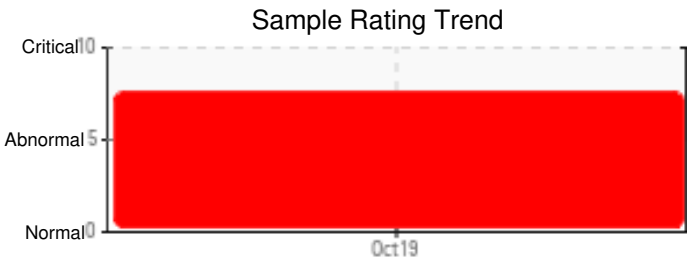
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/25/19	11/22/19	5y		410 / 210	20.5	28.2	0.813	0.517	641 / 339	748 / 398	880 / 471	8.26
Baseline Data				410 / 210		32	0.41		707 / 375	802 / 428	910 / 488	1.5





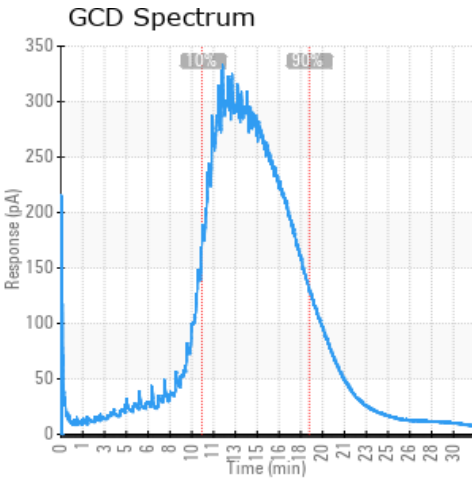


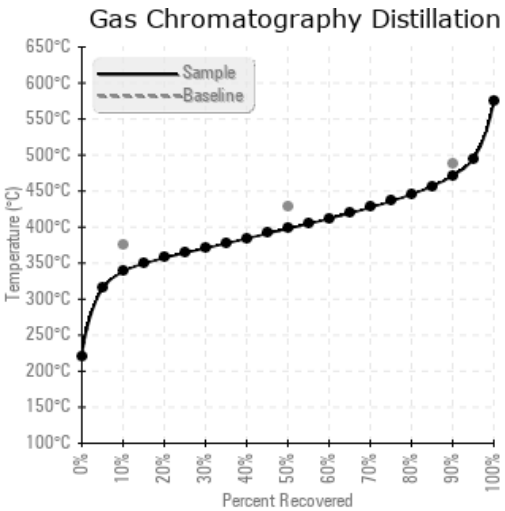


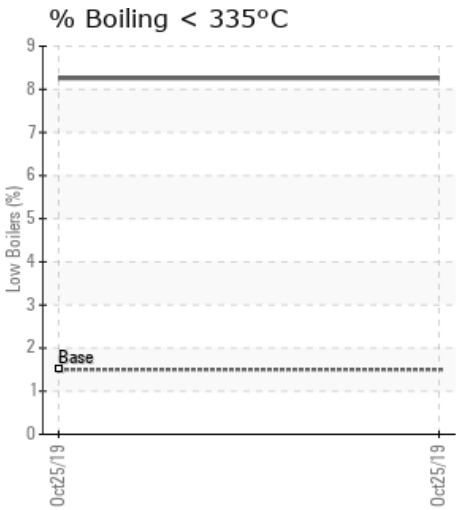


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
10/25/19	169	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	1	0	0	0	12	6	4	42
Baseline Data			0	0						0			0	0					5				250	

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







Historical Comments
