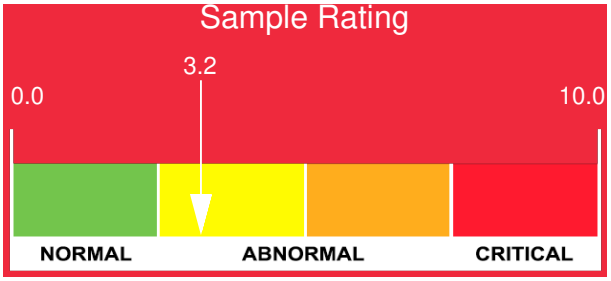
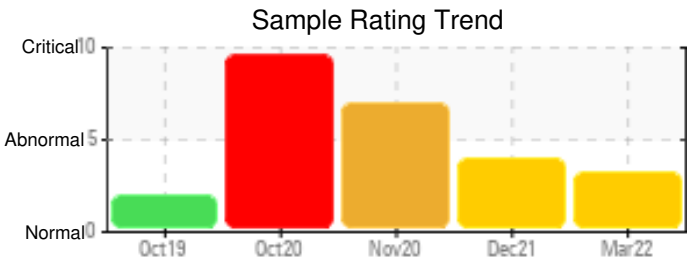




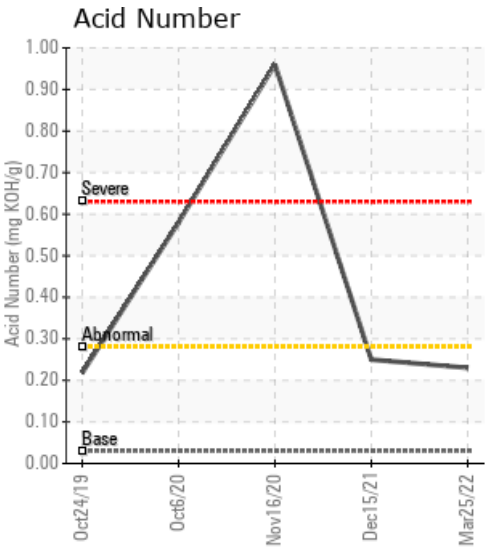
D1ROCKDALE

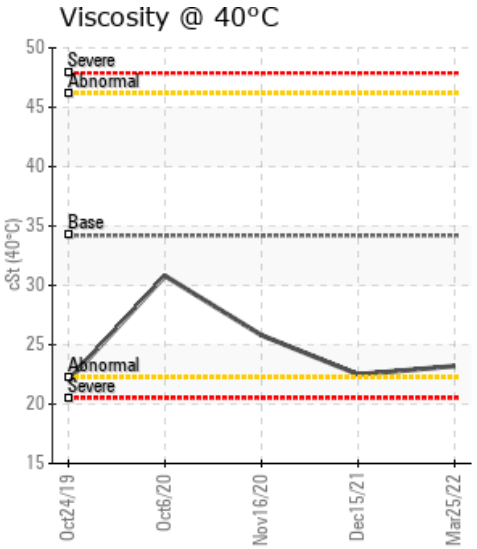
Customer: PTRHTF30107	System Information	Sample Information
D-CONSTRUCTION 16805 QUARRY RD MORRIS, IL 60450 USA Attn: Chris Lenzie Tel: (815)405-6831 E-Mail: clenzie@sandenoinc.com	System Volume: 600 gal Bulk Operating Temp: 340F / 171C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: GILLMAN	Lab No: 02480443 Analyst: Joe Goecke Sample Date: 03/25/22 Received Date: 03/30/22 Completed: 04/04/22 Joe Goecke Joe.goecke@hollyfrontier.com

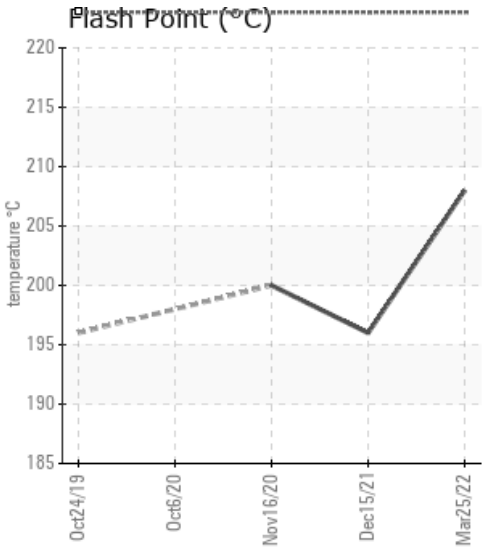
Recommendation: High calcium and sulfur numbers inidcate this system has been contaminated with some other fluid. higher levels of these additives can be deterimental to Petro-therm. I suggest investigating the source of this and if any other product has been introduced into the system. once this has been confirmed and controlled I would suggest at least a partial repalcement of Pterotherm if not a complete change.

Comments: Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is marginally low.

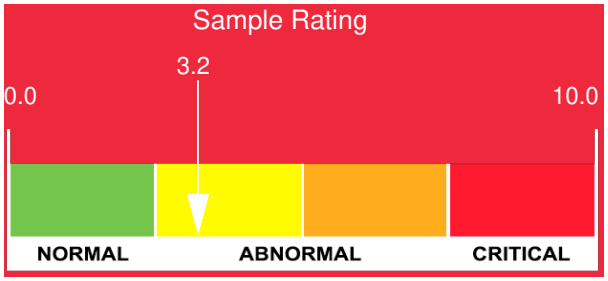
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/25/22	03/30/22	2.0y	OUTSIDE #2	406 / 208	115.4	23.2	0.23	0.076	672 / 356	770 / 410	881 / 472	4.71
03/25/22	03/30/22	2.0y	BOILER SHOP	424 / 218	156.5	23.3	0.23	0.091	671 / 355	770 / 410	878 / 470	4.85
12/15/21	12/30/21	2.0y	Return line	385 / 196	136.7	22.5	0.25	0.430	671 / 355	767 / 408	874 / 468	4.72
11/16/20	11/18/20	0.0y		392 / 200	143.3	25.8	0.96	1.01	679 / 359	767 / 408	866 / 463	3.08
10/06/20	10/16/20	0.0y	RESERVOIR		15856.4	30.8	0.58	0.399	677 / 358	768 / 409	869 / 465	3.46
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

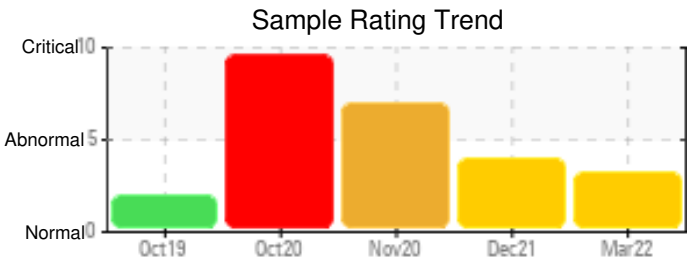






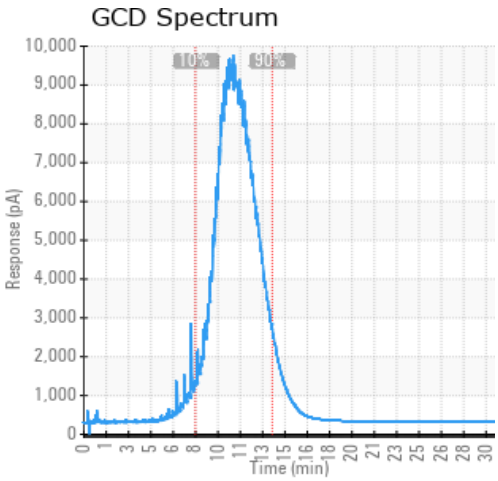
PETRO-CANADA LUBRICANTS

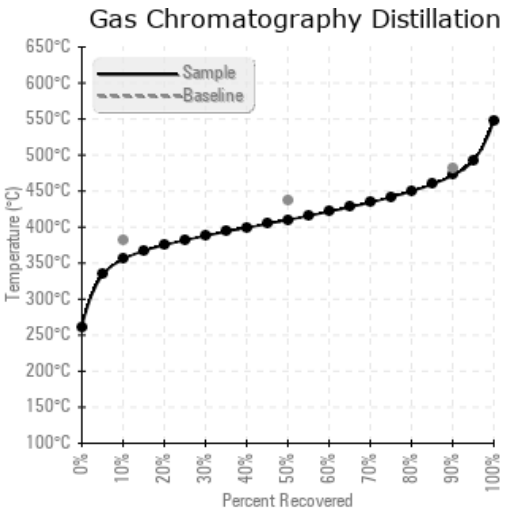


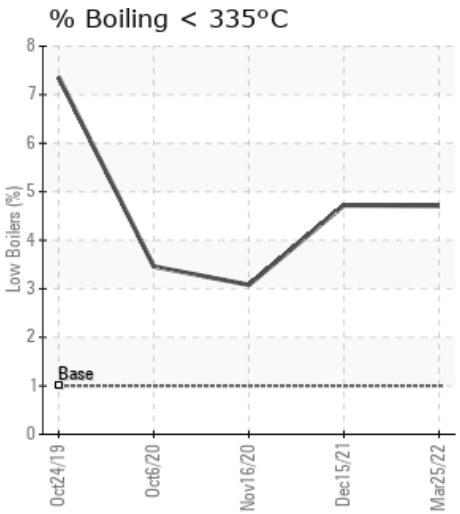


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/25/22	5	0	0	0	0	0	0	0	0	0	0	28	0	0	0	0	1	0	0	4	1179	0	2	0
03/25/22	5	0	0	0	0	0	0	0	0	0	0	28	0	0	0	0	1	0	0	4	1179	0	2	1
12/15/21	5	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	1	0	0	4	1265	0	2	0
11/16/20	27	0	0	0	0	0	1	0	0	0	0	22	0	0	0	0	2	0	0	2	43	0	3	2
10/06/20	32	0	0	0	6	0	0	0	0	0	0	4	0	0	0	0	0	0	3	0	8	0	0	4
Baseline Data			0	0						0			0	0					0				0	

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







Historical Comments

03/25/22	Boiler room sample - same location as older samples - Solids in the oil have lowered but there is still high levels of calcium and sodium in the oil. Appears to be contamination from another fluid but need to find out where it is coming from and then look to change out the fluid or at least do a partial drain and recharge to remove the contamination it could be detrimental to the Petro-Therm Heat transfer fluid. Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is marginally low.
12/15/21	The sample is contaminated with large amounts of calcium and some sodium. The acid number is with in specification but there are solids in the oil as can be seen by the increase in pentane solids and the flash point is lower - looks like there might be thermal cracking of the system. it is important to increase the temperature of the system slowly to keep from Thermally Cracking the oil. Resample in 3-6 months Pentane Insolubles levels are abnormally high. Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is marginally low.
11/16/20	Solids and acid number are high indicating there is large amounts of contamination in the system which have and will continue to cause fouling of the system and buildup affecting the overall efficiency and performance of the system, consider cleaning and flushing the system. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is abnormally low.
10/06/20	This sample has over 10% water (15,000 ppm) and a high insoluble rate. Questioning where this sample was taken this amount of water would affect the performance of the system. Recommend re-sampling the system. Sample should be representative of the circulating fluid. Not taken from site gauges, or dead legs. Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. Pentane Insolubles levels are abnormally high. Acid Number (AN) is abnormally high. Acid Number (AN) is abnormally high.. (GCD) 90% Distillation Point is abnormally low.