

# D1ROCKDALE

**Customer: PTRHTF30107**  
 D-CONSTRUCTION  
 16805 QUARRY RD  
 MORRIS, IL 60450 US  
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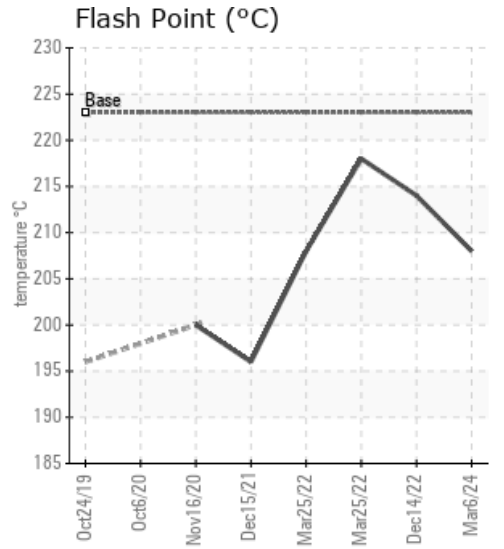
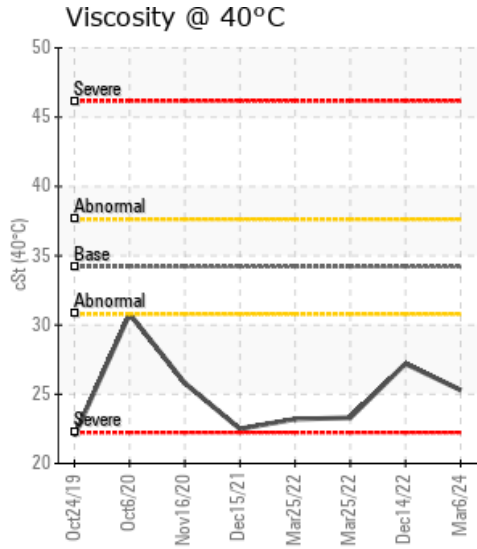
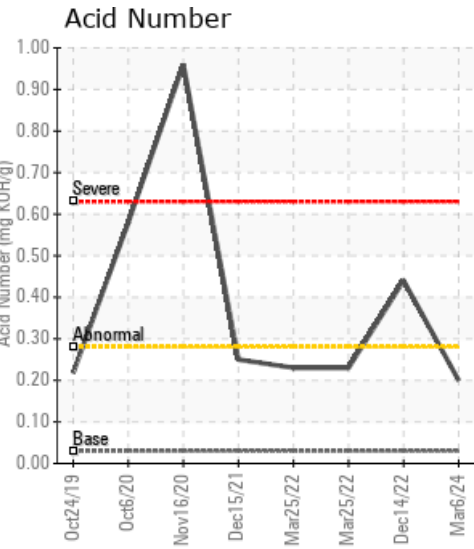
**System Information**  
 System Volume: 600 gal  
 Bulk Operating Temp: 340F / 171C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA PETRO-THERM  
 Make: GILLMAN

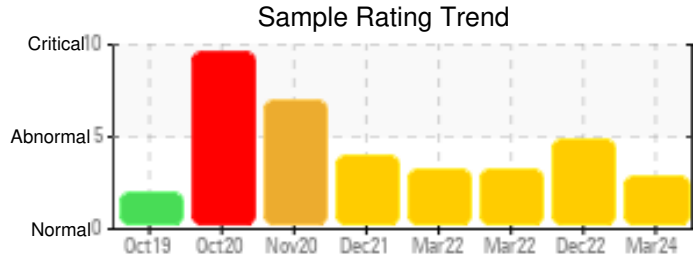
**Sample Information**  
 Lab No: 02621625  
 Analyst: Yvette Trzcinski  
 Sample Date: 03/06/24  
 Received Date: 03/12/24  
 Completed: 03/21/24  
 Yvette Trzcinski  
 yvette.trzcinski@HFSinclair.com

Recommendation: Acid number and solids have lowered since the sample from last year. The Low Boilers has increased slightly which is a sign of thermal degradation. Fluid is acceptable for continued service resample 8 months before shutting down to monitor

Comments: Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. Visc @ 40°C is abnormally low.

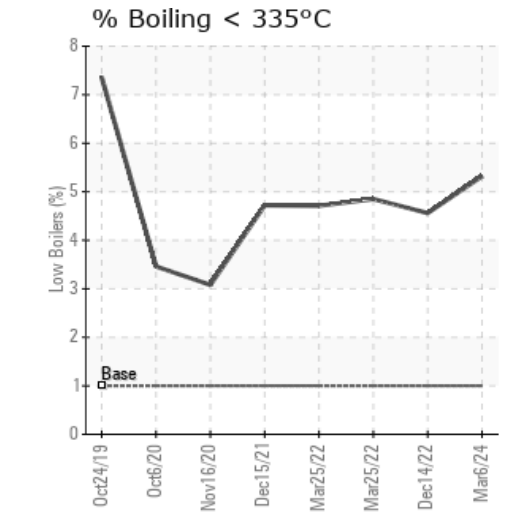
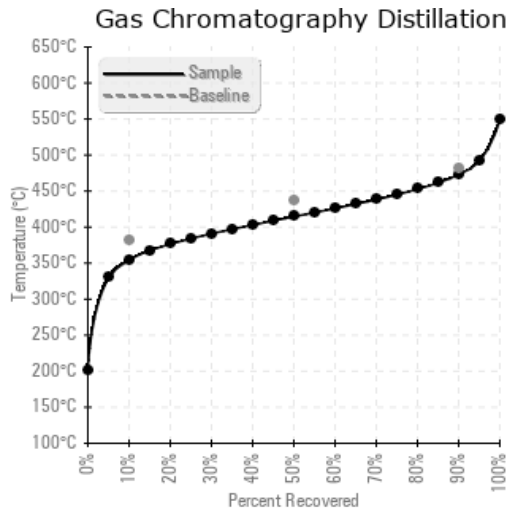
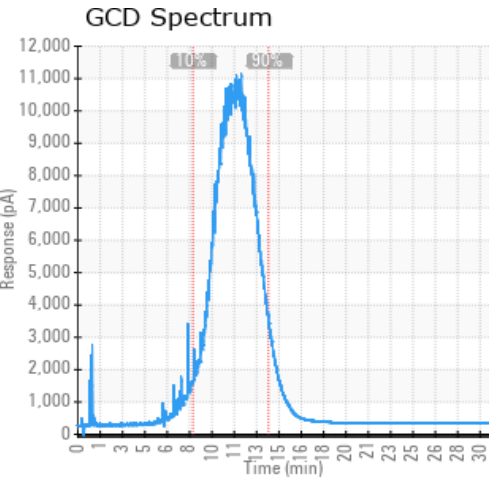
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/06/24	03/12/24	0.0y		406 / 208	184	25.3	0.20	0.067	670 / 354	778 / 415	883 / 473	5.32
12/14/22	02/28/23	0.0y		417 / 214	136.2	27.2	0.44	0.132	675 / 357	778 / 414	881 / 472	4.56
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
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
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
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
03/06/24	8	0	0	0	2	0	0	0	0	0	0	31	3	0	0	0	1	0	0	4	1373	0	2	0
12/14/22	10	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	2	0	0	4	1633	0	0	1
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
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
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
<b>Baseline Data</b>			0	0						0			0	0					0				0	

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



Historical Comments	
12/14/22	Degradation of the fluid appears to be occurring due to oxidation the viscosity and acid number are increasing the pentane insolubles are increasing as well. Severely high levels of Calcium and sodium and they appear to have increased - these are contaminates signs of another fluid being added to the system which could affect the fluid life and performance of the Petro-therm heat transfer oil Calcium ppm levels are severely high. Acid Number (AN) is abnormally high. Sodium ppm levels are abnormally high. Visc @ 40°C is abnormally low. (GCD) 90% Distillation Point is marginally low.
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.
03/25/22	High calcium and sulfur numbers indicate this system has been contaminated with some other fluid. Higher levels of these additives can be detrimental 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 replacement of Petrotherm if not a complete change. 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 within 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.

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