

# PLANT 111

**Customer: PTRHTF10017**  
 LAKESIDE INDUSTRIES  
 955 SW ARMCO STREET  
 HILLSBORO, OR 97124 US  
 Attn: Mitch Carlson  
 Tel:  
 E-Mail: mitch.carlson@lakesideind.com

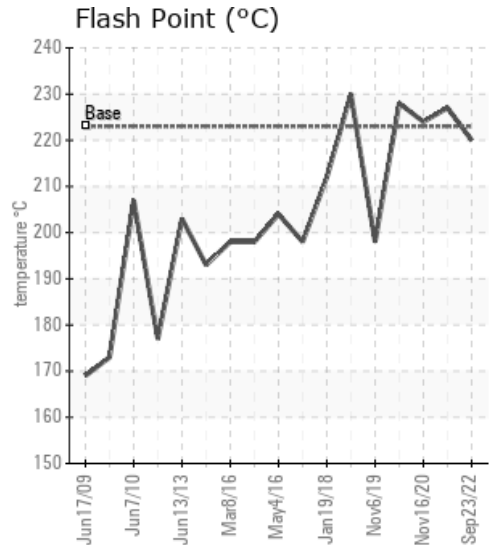
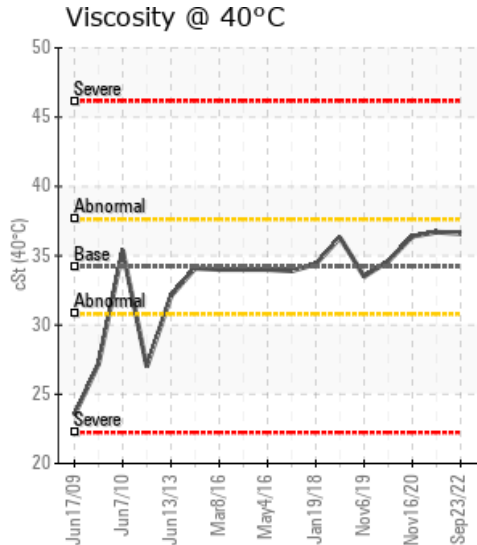
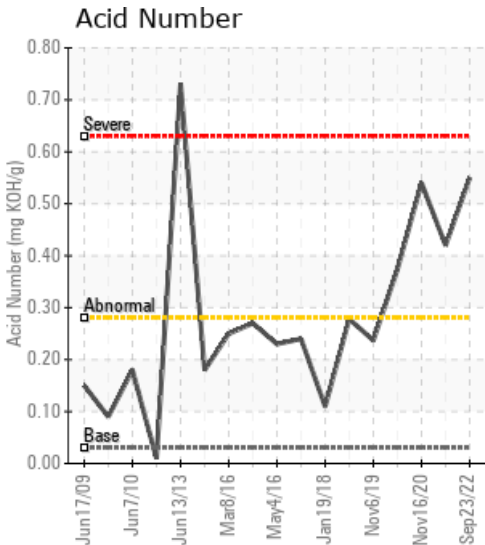
**System Information**  
 System Volume: 330 gal  
 Bulk Operating Temp: 340F / 171C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA PETRO-THERM  
 Make: HIWAY HEAT

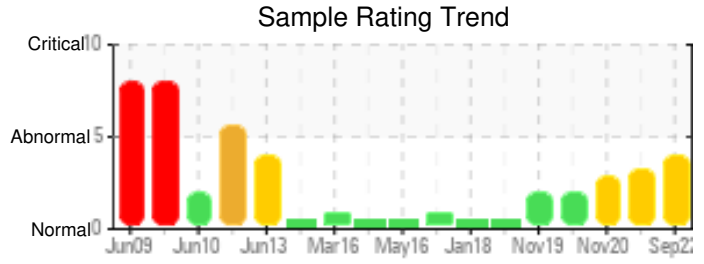
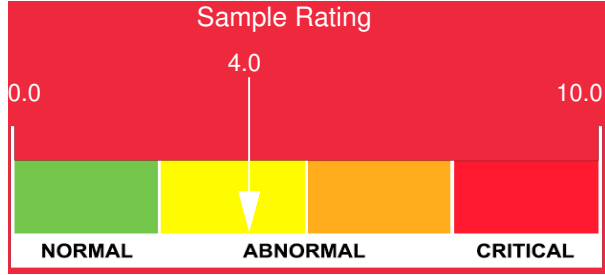
**Sample Information**  
 Lab No: 02514236  
 Analyst: Ron LeBlanc  
 Sample Date: 09/23/22  
 Received Date: 10/03/22  
 Completed: 10/04/22  
 Ron LeBlanc  
 Ronald.LeBlancSr@HFSinclair.com

Recommendation: The sodium content has been rising over the last two samples. This can indicate water in the oil. The Acid Number is elevated which is causing pentane insolubles to rise indicating oxidation and thermal degradation. Sample at next normal interval and we can access if the oil is reaching end of life.

Comments: Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high. Sodium ppm levels are abnormally high.

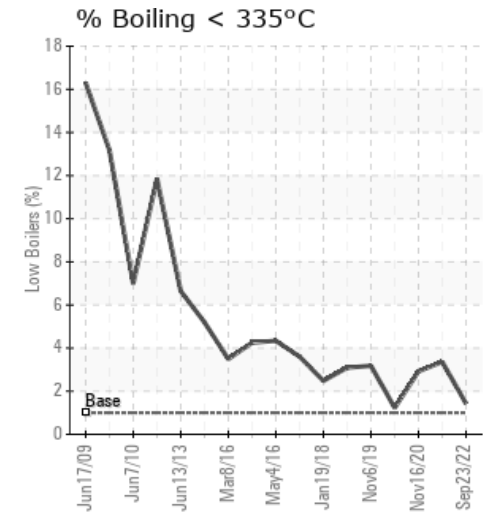
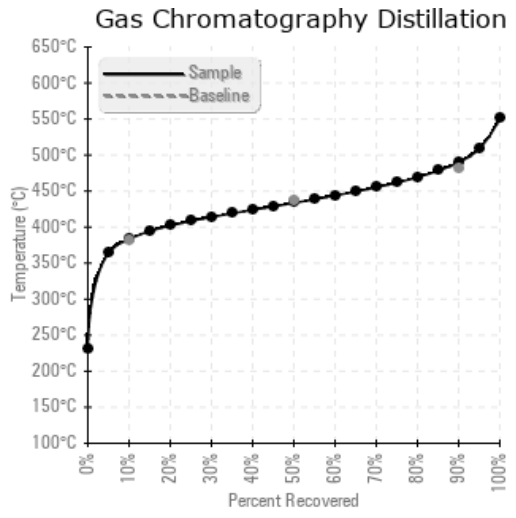
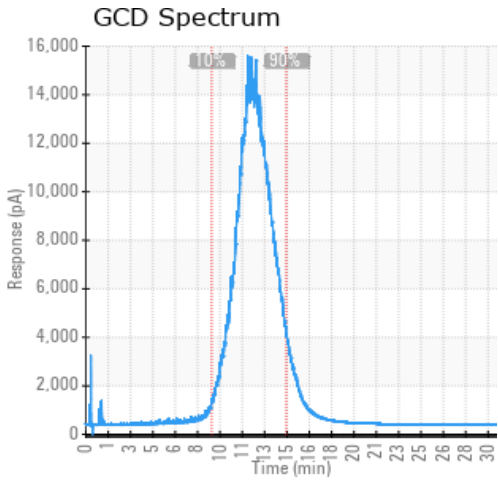
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/23/22	10/03/22	0.0y	PUMP	428 / 220	11.7	36.6	0.55	1.14	722 / 383	812 / 434	913 / 490	1.43
03/08/22	03/25/22	13.0y		441 / 227	54.1	36.7	0.42	0.085	690 / 366	787 / 419	935 / 502	3.36
11/16/20	11/27/20	12.0y	Filter Inlet	435 / 224	123.4	36.4	0.54	0.672	699 / 371	791 / 422	901 / 483	2.92
01/16/20	01/27/20	9.0y	FILTER	442 / 228	15.7	34.6	0.374	0.194	715 / 379	811 / 433	921 / 494	1.23
11/06/19	12/11/19	11.0y	BEFORE FILTER	388 / 198	19.8	33.5	0.237	0.216	708 / 375	821 / 438	951 / 511	3.18
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
09/23/22	75	0	0	0	0	0	1	0	0	0	3	25	0	0	0	0	0	0	0	0	0	0	0	1
03/08/22	100	0	0	0	1	0	0	0	0	0	4	22	0	0	0	0	0	0	0	0	0	0	0	2
11/16/20	53	0	0	0	1	0	0	0	0	0	6	9	0	0	0	0	0	0	0	0	0	0	0	2
01/16/20	12	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
11/06/19	8	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
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	
03/08/22	GCD 90% is elevated. AN is elevated. Viscosity has increased indicating oxidation. Consider adding 5 to 10% new oil. Resample in 3 months. Acid Number (AN) is abnormally high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is abnormally high.
11/16/20	Acid Number is high along with Pentane Insolubles. This can indicate contamination from oxidation of the fluid. If the system has a strainer or filter: inspect them. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high.
01/16/20	(GCD) 90% Distillation Point is marginally high in this latest sample and it has lowered from previous sample. The Acid Number is elevated. The age of the oil should be reported. Adding some fresh oil can lower the AN. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
11/06/19	(GCD) 90% Distillation Point is severely high. It is the only indicator that is off spec in the sample. I would suggest re-sample. Purge oil before collecting the sample from sample point. (GCD) 90% Distillation Point is severely high.

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