

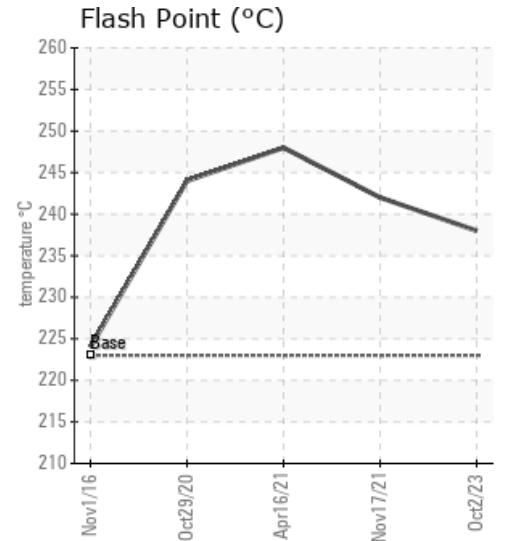
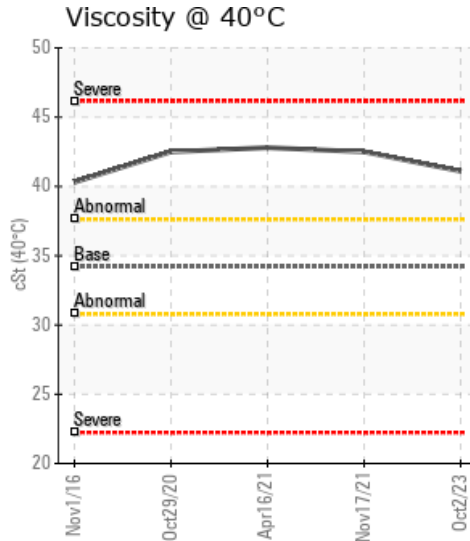
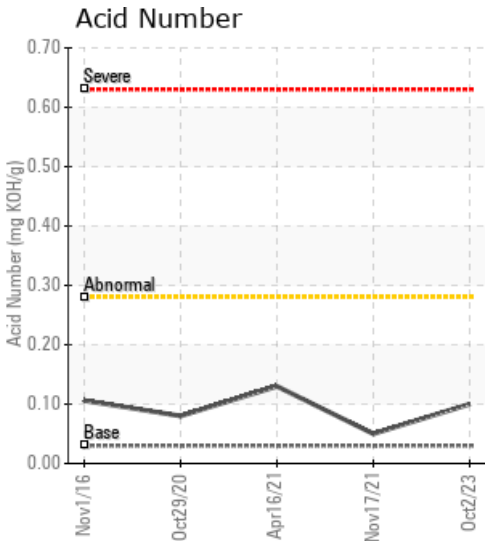
## [Millhaven Terminal] HEATEC #1

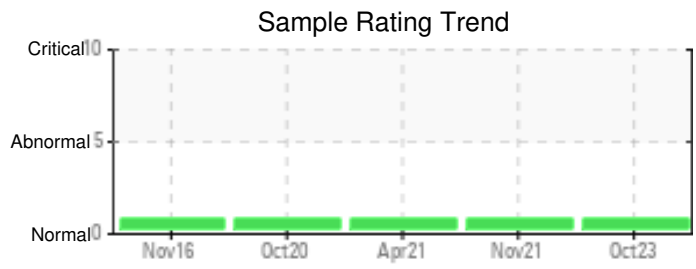
Customer: PTRHTF30037	System Information	Sample Information
GREEN INFRASTRUCTURE GROUP ASPHALT ... #7 JIM SNOW DR. RR3 BATH, ON K0H 1G0 CA Attn: Mark Lewis Tel: (613)389-1861 E-Mail: mlewis@gipi.com	System Volume: 100000 ltr Bulk Operating Temp: 420F / 216C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: HEATEC	Lab No: 02586958 Analyst: Behshad Sabah Sample Date: 10/02/23 Received Date: 10/04/23 Completed: 10/06/23 Behshad Sabah behshad.sabah@HFSinclair.com

Recommendation: Higher used oil flash point indicates the low boilers evaporated which leads to higher GCD at 90% and oil viscosity. At this moment the oil is good to go. Annual sampling is recommended. To adjust these properties, you can sweeten the system by adding 10% of the oil volume to the system.

Comments: (GCD) 90% Distillation Point is abnormally high.

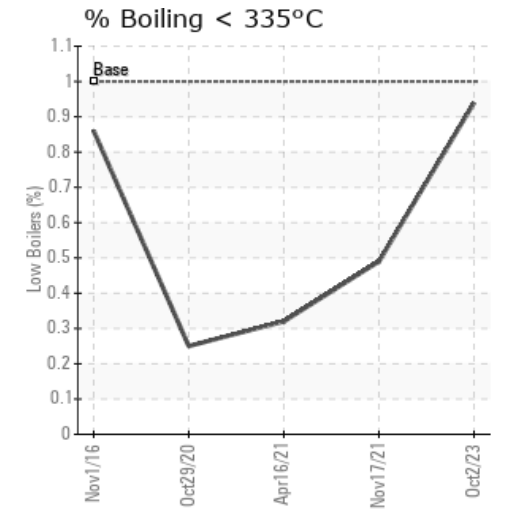
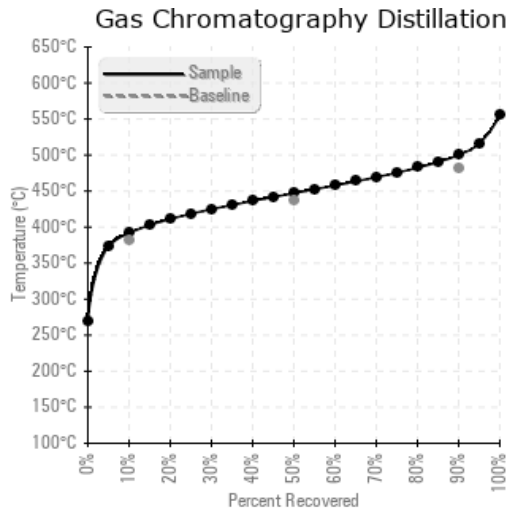
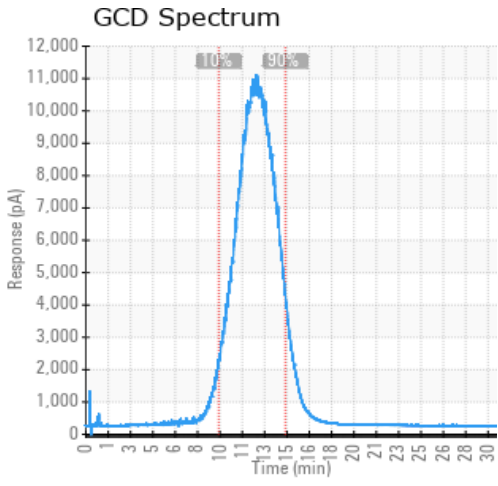
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/02/23	10/04/23	20.0y		460 / 238	35.9	41.1	0.10	0.081	737 / 392	837 / 447	932 / 500	0.94
11/17/21	11/29/21	20.0y		468 / 242	13.7	42.5	0.05	0.066	739 / 393	839 / 449	932 / 500	0.49
04/16/21	04/21/21	10.0y		478 / 248	15.1	42.8	0.13	0.175	732 / 389	834 / 446	932 / 500	0.32
10/29/20	11/04/20	5.0y		471 / 244	19.8	42.5	0.08	0.105	741 / 394	838 / 448	928 / 498	0.25
11/01/16	11/03/16	0.0y	PIPING AT HEATER 1	435 / 224	22.9	40.3	0.106	0.074	722 / 383	824 / 440	933 / 501	0.86
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
10/02/23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/17/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/16/21	1	0	0	0	0	0	0	0	0	2	10	0	0	0	0	0	0	0	0	0	0	0	0	0
10/29/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/01/16	6	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	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	
11/17/21	in general oil is in good condition. A small portion of light hydrocarbon evaporated which is traceable in Flash point increase and GCD higher temperatures. keep the annual sampling. (GCD) 90% Distillation Point is abnormally high.
04/16/21	Considering the age of the oil, the oil is in good condition. there is a small portion of the oil which is oxidized and we can see the trace in increased viscosity an acid number. nothing alarming at this moment. the 90% GCD is a little high with is a proof of oxidized oil. keep monitoring the system. (GCD) 90% Distillation Point is abnormally high.
10/29/20	Relatively little change in the fluid properties since the previous sample. Fluid condition is suitable for continued use. Resample in one year to monitor. (GCD) 90% Distillation Point is abnormally high.
11/01/16	Suspect asphalt contamination in sample, due to the higher 90% GCD and the trace Vanadium. No evidence of low boilers in the system. Re-sample again in six months to monitor the contamination. (GCD) 90% Distillation Point is abnormally high.

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