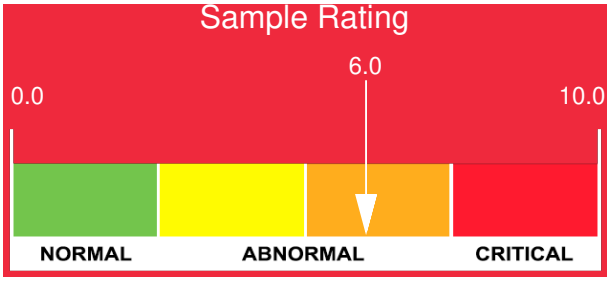
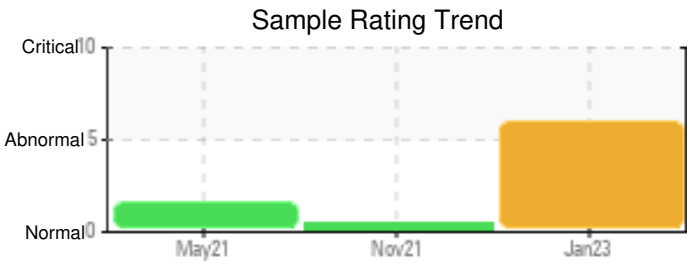




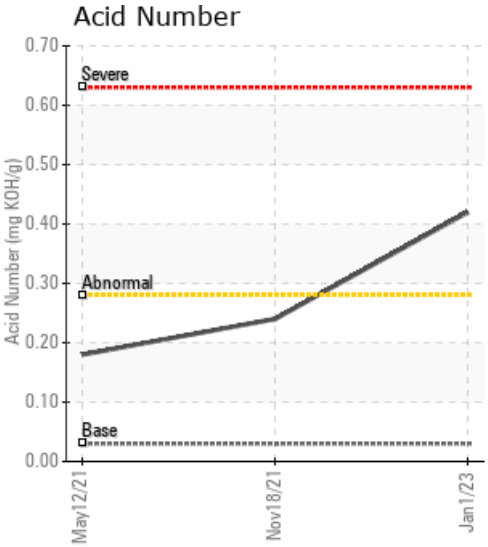
[PLATEAU] ENERGY PLANT FURNACE

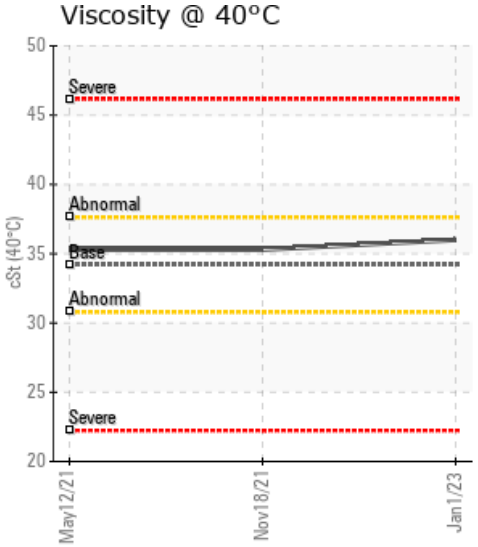
Customer: PTRHTF20249	System Information	Sample Information
Canfor - Plateau 1399 Bearhead Rd. Vanderhoof, BC V0J 3A2 Canada Attn: Elaine Penner Tel: (250)567-8359 E-Mail: elaine.penner@canfor.com	System Volume: 190000 ltr Bulk Operating Temp: 455F / 235C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: DELTECH	Lab No: 02532123 Analyst: Ray Rolston Sample Date: 01/01/23 Received Date: 01/09/23 Completed: 01/13/23 Ray Rolston Ray.Rolston@HFSinclair.com

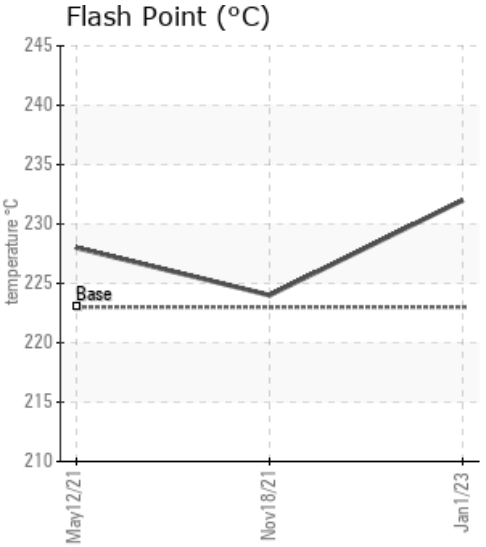
Recommendation: The sample was not taken correctly; please submit another heat transfer fluid sample. Iron wear has increased from 25 ppm to 79 ppm likely due to a sampling anomaly. Water content was measured at 0.611% or 6,112 ppm compared with the previous samples of 32 ppm and 20.7 ppm with free water >10%. The Acid Number (AN) has almost doubled from 0.24 to 0.42 mg KOH/g which triggered a warning. Pentane Insolubles (solids) content has also increased from 0.092% on the previous sample to 0.211%. A simulated distillation (GCD) could not be run due to the high water content.

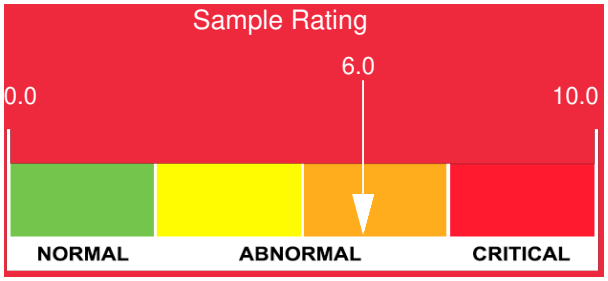
Comments: Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. *** SimDis (GCD) not run due to high water content present in the sample *** Acid Number (AN) is abnormally high.

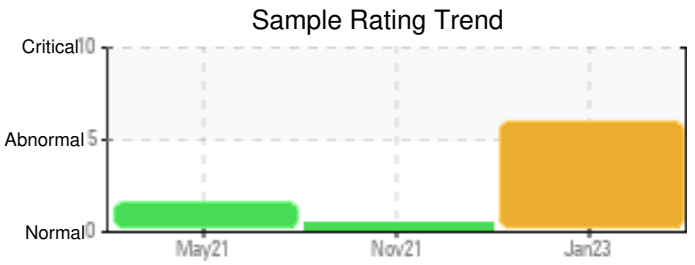
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/01/23	01/09/23	13.0y		450 / 232	6112.2	36.0	0.42	0.211				
11/18/21	12/03/21	11.0y	pipe before stack	435 / 224	32.0	35.3	0.24	0.092	711 / 377	811 / 433	911 / 489	2.80
05/12/21	05/21/21	11.0y	Primary Pipe	442 / 228	20.7	35.3	0.18	0.564	710 / 377	797 / 425	915 / 491	1.11
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00







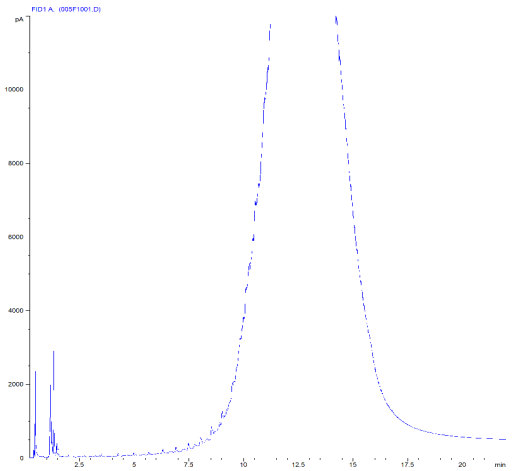


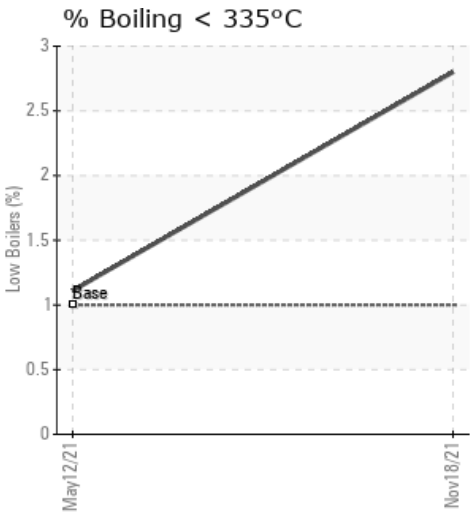


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/01/23	79	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2	0	0	3
11/18/21	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/12/21	8	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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

GCD Spectrum





Historical Comments

11/18/21	The iron content on this sample is 25 ppm compared with 8 ppm on the May 2021 sample. This may be due to differences in the way that the sample was obtained, or perhaps the sample was taken from a different location. Water content at 32 ppm and Acid Number (AN) at 0.24 mg KOH/g are low which is good. Cleveland Open Cup (COC) Flash Point and Gas Chromatograph Distillation (GCD) are good, although the Initial Boiling Point (IBP) is very low at 183 C (fresh = 316 C), and 2.8% GCD % < 335 C is elevated (fresh = 1%) indicating that some low boiler light fractions are present. Pentane Insolubles (solids content) has decreased from 0.564 wt% on the previous sample to 0.092 wt% suggesting that the oil has either been filtered, or a more representative sample was drawn. All other inspections are normal. Re-sample in 12 months to monitor.
05/12/21	Water content of sample was low at 20.7 ppm. Acid Number (AN) at 0.18 mg KOH/g is low which is good. COC Flash Point and GCD Distillation is good, although Initial Boiling Point (IBP) is a little low at 285 C indicating that some light fractions are present. Pentane Insolubles (solids) content is elevated at 0.564; the warning limit is 0.50%. Recommend investigating whether the heat transfer fluid can be filtered to remove this sediment. Re-sample in 6 months to monitor the fluid's condition. Pentane Insolubles levels are severely high.