

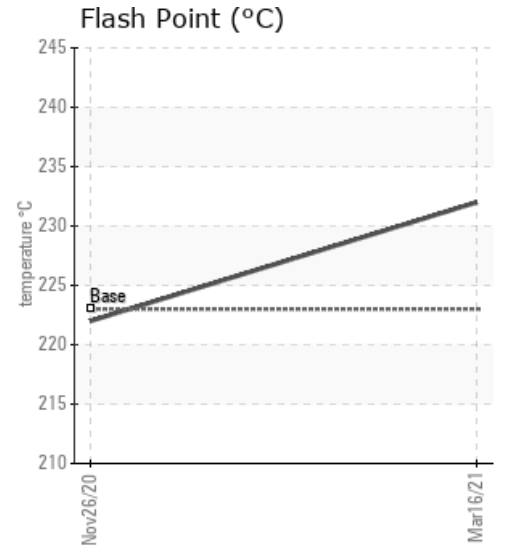
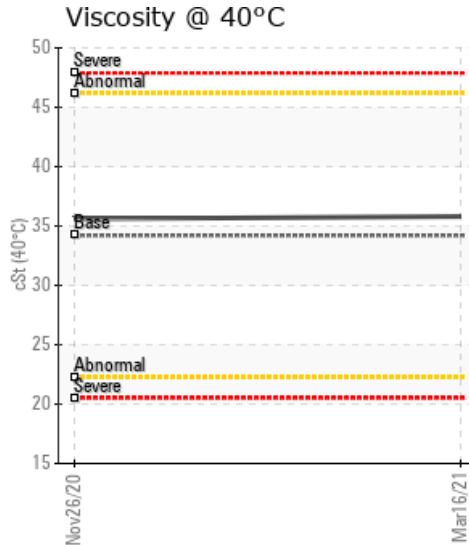
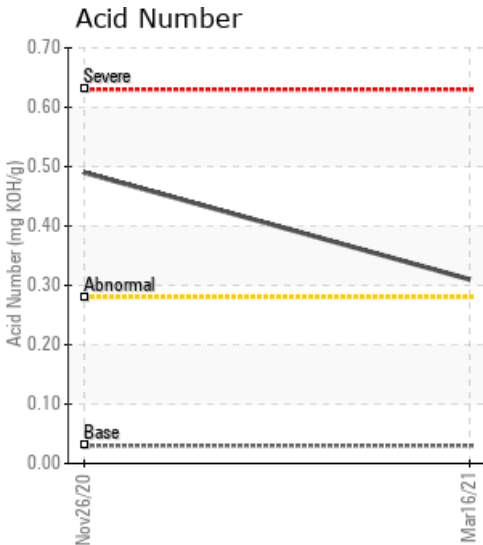
CANFOR CHETWYND HOT OIL

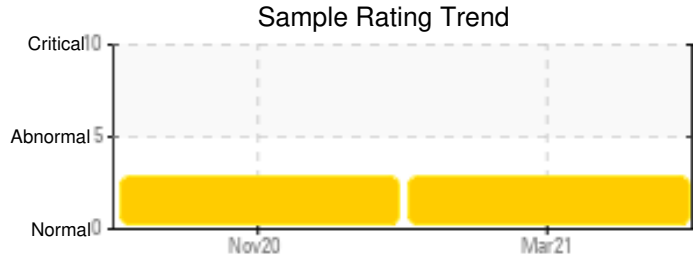
Customer: PTRHTF20248	System Information	Sample Information
CANFOR - CHETWYND SAWMILL 4700 50 STREET CHETWYND, BC V0C 1J0 Canada Attn: Michael Hyns Tel: (250)788-6217 E-Mail: michael.hynd@canfor.com	System Volume: 41000 ltr Bulk Operating Temp: 464F / 240C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: DELTECH THERMAL FUEL	Lab No: 02413750 Analyst: Clinton Buhler Sample Date: 03/16/21 Received Date: 04/07/21 Completed: 04/12/21 Clinton Buhler Clinton.Buhler@hollyfrontier.com

Recommendation: The condition of the Petro-Therm heat transfer fluid has not changed substantially since the last sample taken in Nov 2020. However, pentane insolubles (solids) content has increased from 0.632 wt% to 1.01 wt%. The condemning guideline for this test is 0.5%. Re-sample in Sep 2021 to continue to monitor the fluid's condition.

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

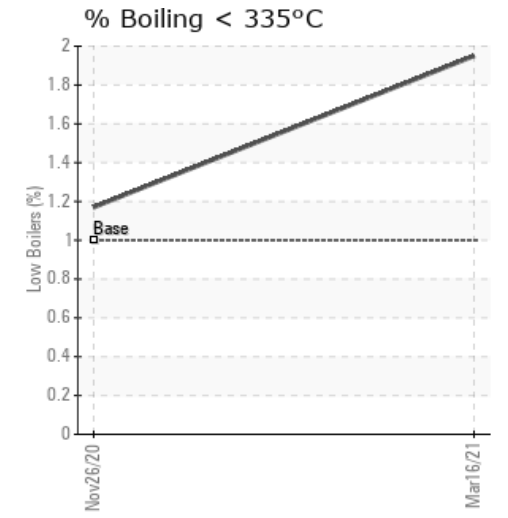
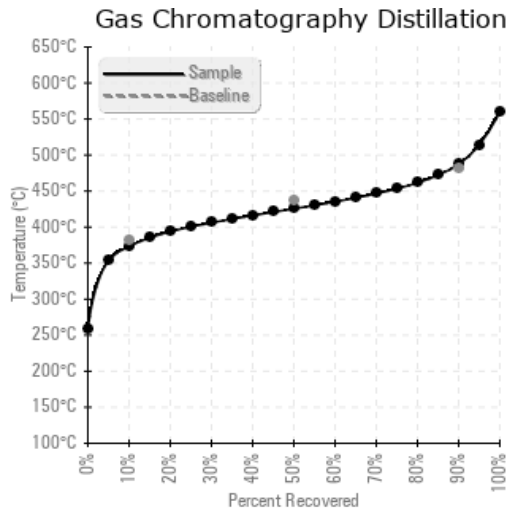
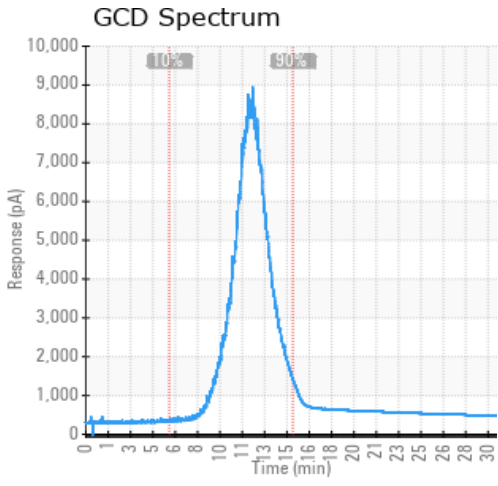
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/16/21	04/07/21	9.0y	Fill drain valve	450 / 232	29.1	35.8	0.31	1.01	704 / 373	798 / 426	909 / 487	1.95
11/26/20	12/11/20	10.0y	PUMP VALVE	432 / 222	23.7	35.6	0.49	0.632	722 / 384	813 / 434	904 / 484	1.17
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
03/16/21	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
11/26/20	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	2
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

11/26/20	Sample results indicate an elevated Acid Number and Solids content; both of which can be associated to oxidation degradation. Ensure that expansion tank blanket gas is operational to reduce subsequent oxidation. The solids content is likely related to fluid degradation byproducts and corrosive wear particles (iron). The remaining sample parameters indicate suitable results. Please re-sample in 3 months to help establish a trend after which time further recommendations can be made. Please ensure that sample valve and related piping or tubing is thoroughly purged PRIOR to obtaining the fluid sample in the sample container to ensure a representative sample. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high.
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