

LOUISIANA PACIFIC FORT ST. JOHN

Customer: PTRHTF20195
 LOUISIANA-PACIFIC CANADA LTD.
 8220 250 ROAD RR 1 SITE 13 COMP
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 FORT ST. JOHN, BC V1J 4M6 Canada
 Attn: Bryan Chatten
 Tel: (250)793-2387
 E-Mail: bryan.chatten@lpcorp.com

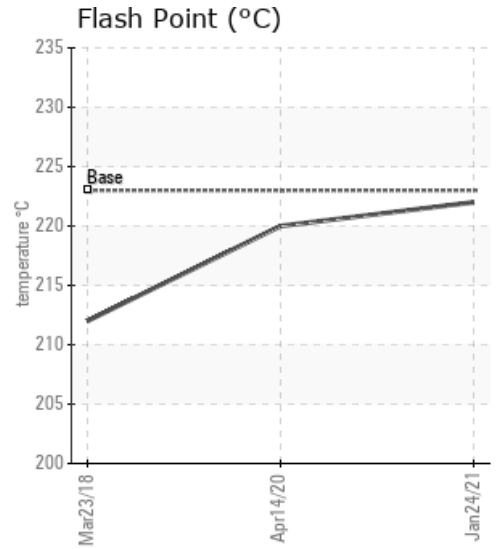
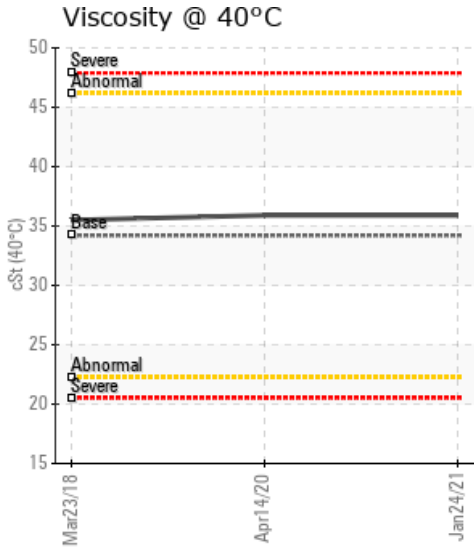
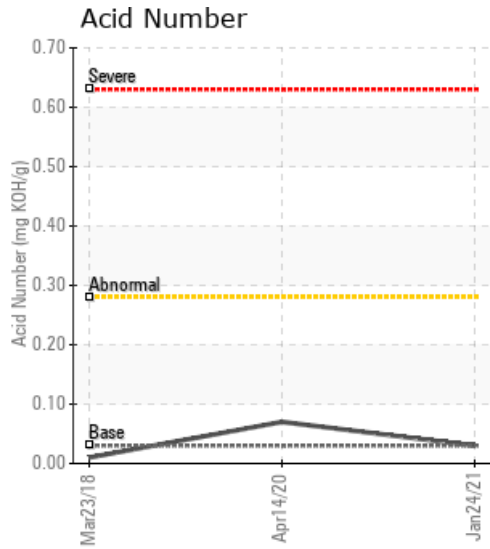
System Information
 System Volume: 3000000 ltr
 Bulk Operating Temp: 518F / 270C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make: GTS

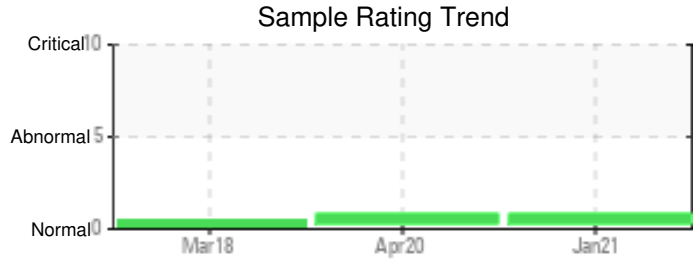
Sample Information
 Lab No: 02400592
 Analyst: Clinton Buhler
 Sample Date: 01/24/21
 Received Date: 02/01/21
 Completed: 02/05/21
 Clinton Buhler
 Clinton.Buhler@hollyfrontier.com

Recommendation: Sample results indicate that the heat transfer fluid is in suitable condition for continued service. Please re-sample in one year

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

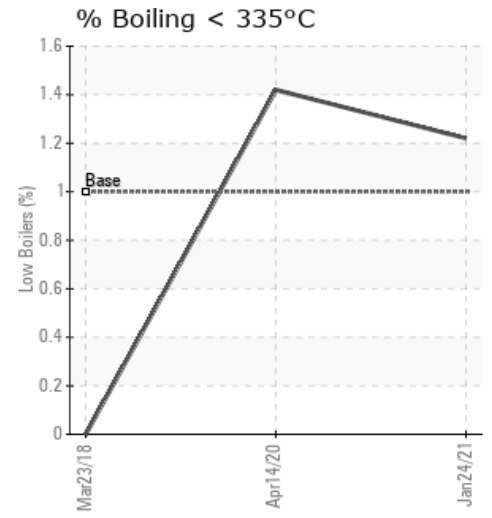
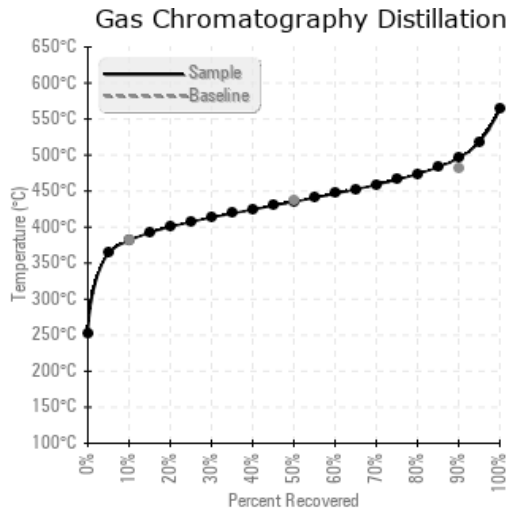
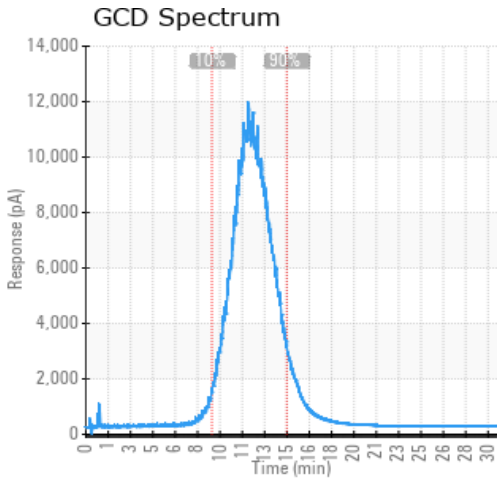
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/24/21	02/01/21	0y	Slip Stream Filter	432 / 222	7.4	35.9	0.03	0.092	718 / 381	815 / 435	924 / 496	1.22
04/14/20	05/22/20	15y	slipstream TEST	428 / 220	25.7	35.9	0.07	0.083	716 / 380	814 / 434	919 / 493	1.42
03/23/18	04/03/18	0y		414 / 212	39.8	35.5	0.01	0.026	700 / 371	786 / 419	898 / 481	0.00
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
01/24/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/14/20	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/23/18	0	0	0	0	0	0	0	0	0	0	0	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

04/14/20	Sample results indicate that the heat transfer fluid is suitable for continued service. Please re-sample fluid in 12 months
03/23/18	Sample results indicate that the thermal fluid is suitable for continued service. Slightly lower 10% and 50% distillation points can be an early indicator of thermal degradation. As a good maintenance practice, consider periodic venting of the expansion tank to allow release of any low boiling vapors. Ensure blanket gas is re-applied after venting. Re-sample in 12 months.

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