

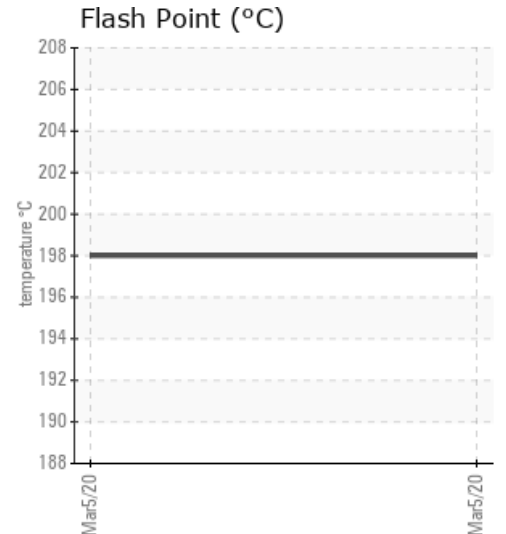
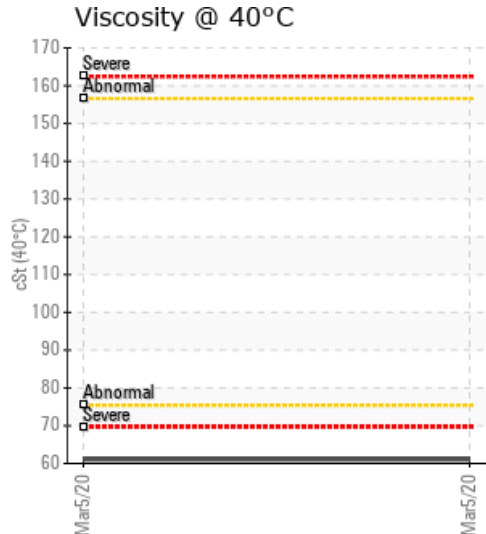
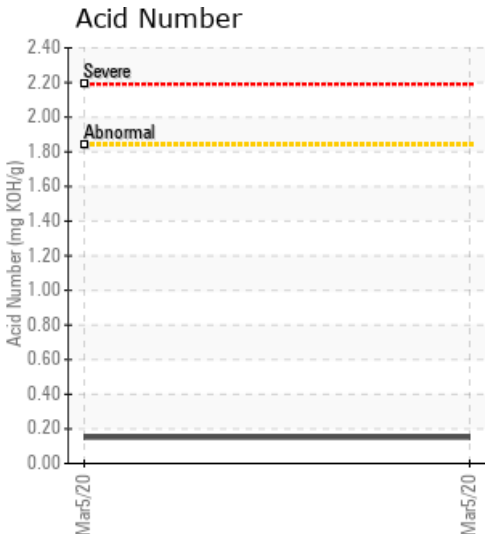
## [LSD 4-25-62-6W6 / Pembina] H-3700 D-TRAIN

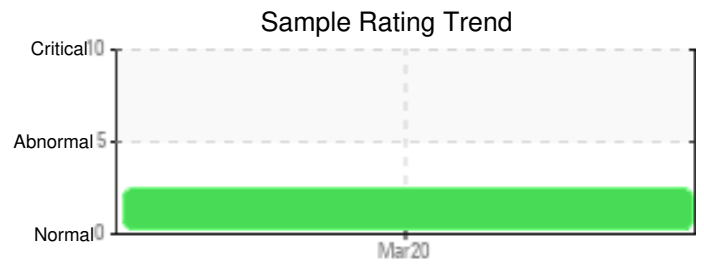
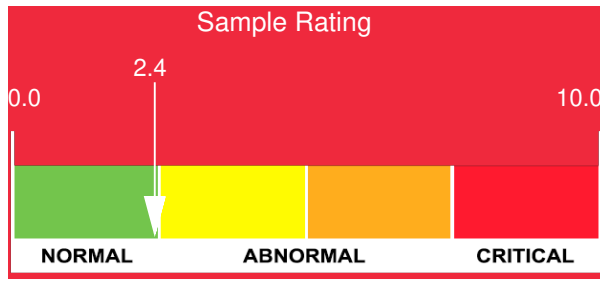
Customer: PTRHTF20175	System Information	Sample Information
QUADRA CHEMICALS 7802 98 STREET CLAIRMONT, AB T0H 0W0 Canada Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 10000 ltr Bulk Operating Temp: 437F / 225C Heating Source: Blanket: Fluid: N/A Make: PANAX OIL AND GAS	Lab No: 02343787 Analyst: Clinton Buhler Sample Date: 03/05/20 Received Date: 03/16/20 Completed: 04/06/20 Clinton Buhler Clinton.Buhler@hollyfrontier.com

Recommendation: Sample results indicate that the fluid is likely suitable for continued service, but please consider that the analyzing lab did not have a reference sample for Duratherm HF. Please submit a new oil reference sample next time a sample is taken so that all parameters can be compared to new. Note that both the fluid's viscosity and flash point are lower than what Duratherm HF lists in its data sheet (104cSt @40C and 276C respectively; this sample: 61 cSt @40C and 198C). This could indicate a mixture of fluids or contamination. 10% and 90% GCD temperatures seem to indicate that oxidation and thermal degradation is either not ongoing or at least in balance to each other. Please resample in 6 months and include a new oil reference sample and please label it as such. Please thoroughly purge the sample valve and piping prior to obtaining samples and fill in all relevant sample registration information.

Comments: COC Flash Point is severely high. Visc @ 40°C is severely low.

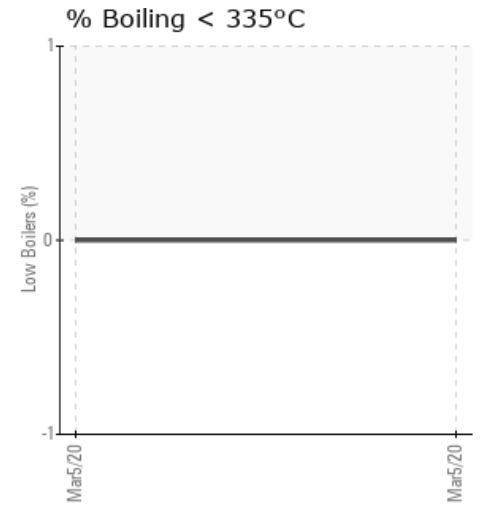
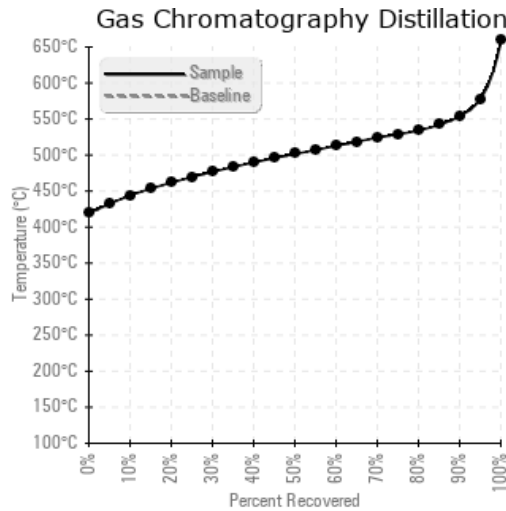
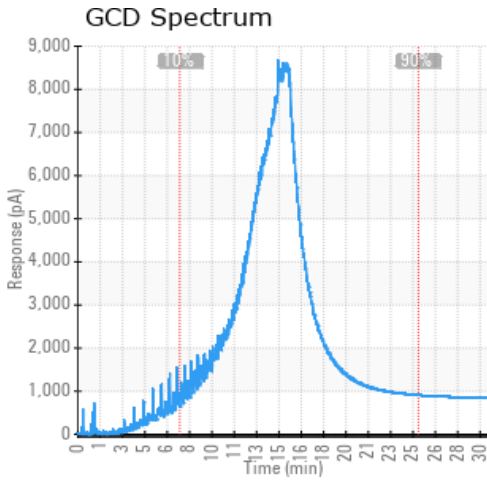
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/05/20	03/16/20	5.5y	REBOILER RETURN	388 / 198	40.2	61.1	0.151	0.084	831 / 444	935 / 501	1029 / 554	0.00
Baseline Data				32 / 0								





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
03/05/20	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	0
<b>Baseline Data</b>													0					0					0	

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



### Historical Comments