

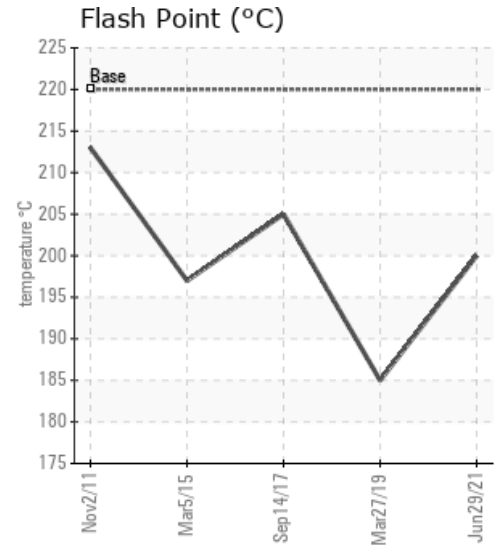
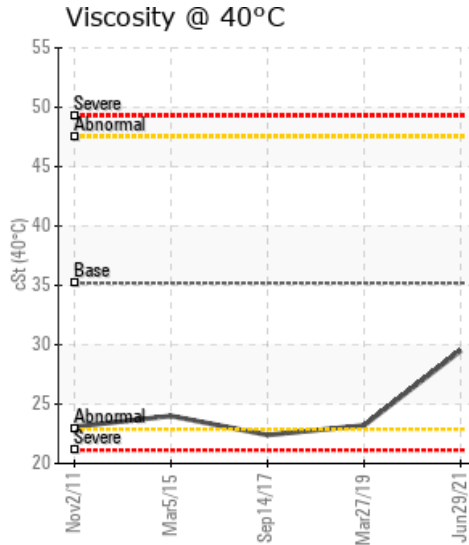
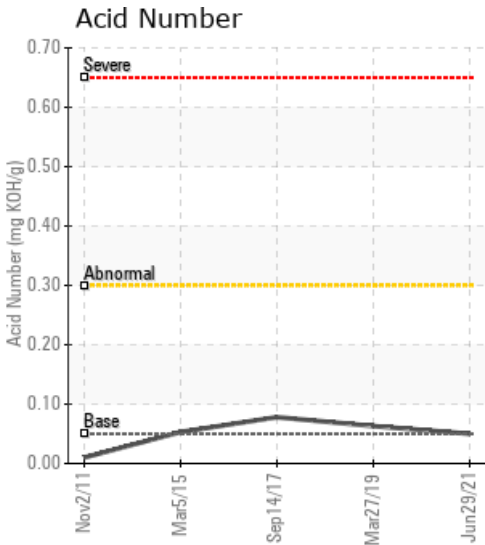
HEAT TRANSFER SYSTEM

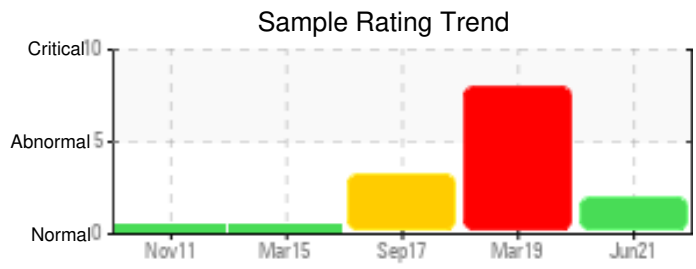
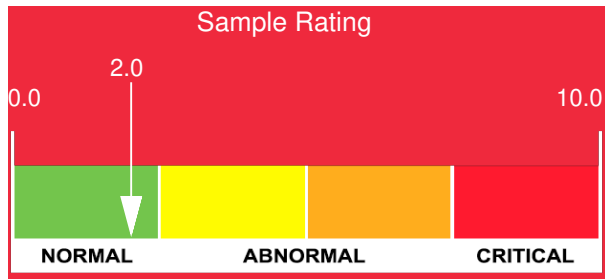
Customer: PTRHTF40093	System Information	Sample Information
VISHANDEL ALMELO AM BACHTSWEG 8 KATWIJK, 2222AK Netherlands Attn: WILBERT SNIJERS Tel: E-Mail: w.snijers@klt.nl	System Volume: 1200 ltr Bulk Operating Temp: 260F / 127C Heating Source: Blanket: Fluid: SHELL THERMIA B Make: WANSON	Lab No: 02430814 Analyst: Luis Rodriguez Sample Date: 06/29/21 Received Date: 07/05/21 Completed: 07/26/21 Luis Rodriguez luis.rodriguez@hollyfrontier.com

Recommendation: Competitor product so we cannot comment on fluid properties themselves but the fluid seems to have recovered since the last sample. Has there been any top up? The low (GCD) 90% Distillation Point indicates thermal cracking is still going on.

Comments: (GCD) 90% Distillation Point is severely low.

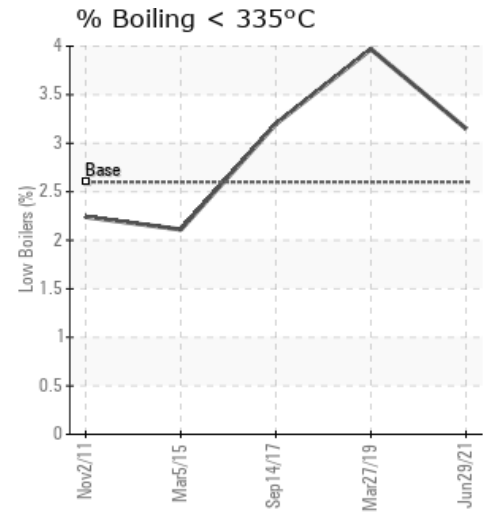
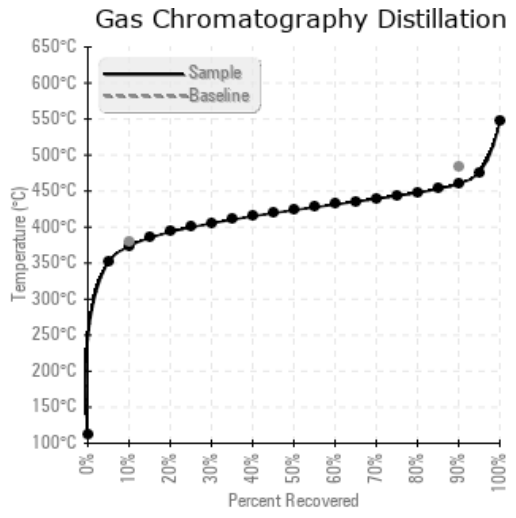
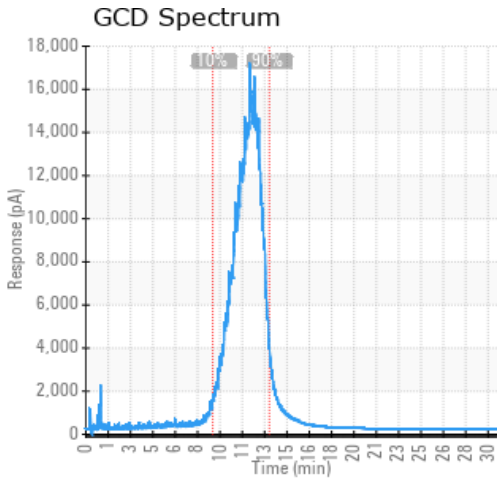
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/29/21	07/05/21	22.0y		392 / 200	93.5	29.5	0.05	0.054	704 / 374	794 / 424	860 / 460	3.15
03/27/19	04/02/19	20.0y		365 / 185	20.1	23.2	0.063	0.022	690 / 366	783 / 417	846 / 452	3.97
09/14/17	09/22/17	18.0y		401 / 205	16.4	22.4	0.078	0.051	698 / 370	791 / 422	851 / 455	3.20
03/05/15	03/12/15	16.0y		387 / 197	25.1	24.0	0.053	0.073	744 / 396	839 / 449	904 / 484	2.11
11/02/11	11/07/11		NA	415 / 213	15	23.1	0.01	0.006	708 / 376	790 / 421	849 / 454	2.241
Baseline Data				428 / 220		35.2	0.05		714 / 379		903 / 484	2.60





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
06/29/21	4	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
03/27/19	10	0	0	0	65	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/14/17	6	0	0	0	51	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/05/15	4	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/02/11	2	0	0	0	18	0	1	0	0	0	5	0	0	0	0	0	0	0	4	0	5	1	3	5
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	
03/27/19	Not a Petro-Canada product so cannot diagnose competitor fluid on chemistry. Copper looks to be increasing which could increase probability of oxidation of the fluid. Flash point and 90% Dist tracking down indicating end of fluid life. Copper ppm levels are severe. (GCD) 90% Distillation Point is severely low. COC Flash Point is marginally low.
09/14/17	Viscosity is reduced. Cu level has increased significantly since the last analysis. Consider checking yellow metal components for corrosion and wear or hard deposits. Copper ppm levels are abnormal.
03/05/15	Oil appears to be in good condition. A slight rise in Copper content but considering the age of this fluid and the overall condition of the fluid which is good and fit for further service. Suggest sample at next scheduled maintenance interval. Please confirm what fluid this is. Copper ppm levels are abnormal. (GCD) 10% Distillation Point is marginally high.
11/02/11	No Comments

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