

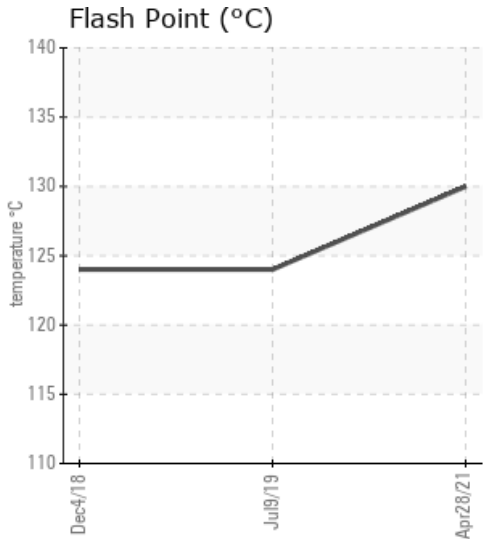
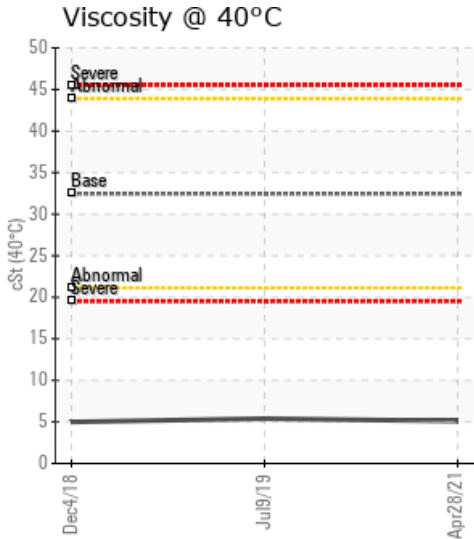
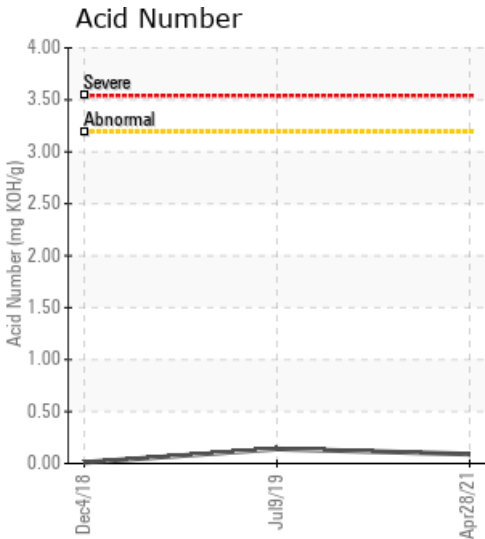
H-1

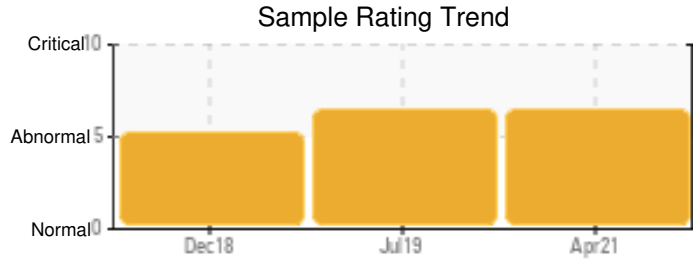
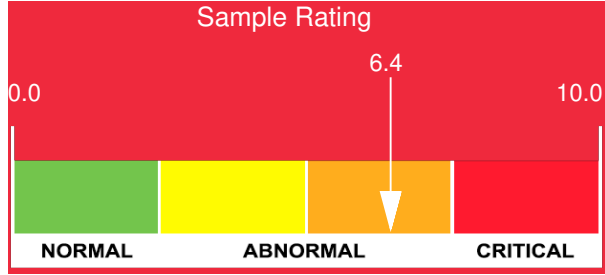
Customer: PTRHTF20208	System Information	Sample Information
Plains Midstream Canada PO Box 3210 Range Road 221 Fort Saskatchewan, AB T8L 2T2 Canada Attn: Marlon Gonzalez Tel: (780)992-2724 E-Mail:	System Volume: 1000 ml Bulk Operating Temp: 500F / 260C Heating Source: Blanket: Fluid: ESSO THERMOIL 32 Make:	Lab No: 02419199 Analyst: Terry Veenstra Sample Date: 04/28/21 Received Date: 05/05/21 Completed: 05/18/21 Terry Veenstra terry.veenstra@hollyfrontier.com

Recommendation: This oil viscosity is 5.1 cSt @ 40°C so is still the majority Essotherm Light (1156). The TAN is still quite low at 0.09 mgKOH/g and the flash point is still good @ 130°C indicating the fluid is in pretty good shape. The Pentane Insolubles are at 0.42% which is slightly higher than normal but still not critical. Consideration should be given to filtering this oil if it gets above 0.50%.

Comments: (GCD) 10% Distillation Point is severely low. (GCD) 90% Distillation Point is severely low. Visc @ 40°C is severely low. COC Flash Point is abnormally low.

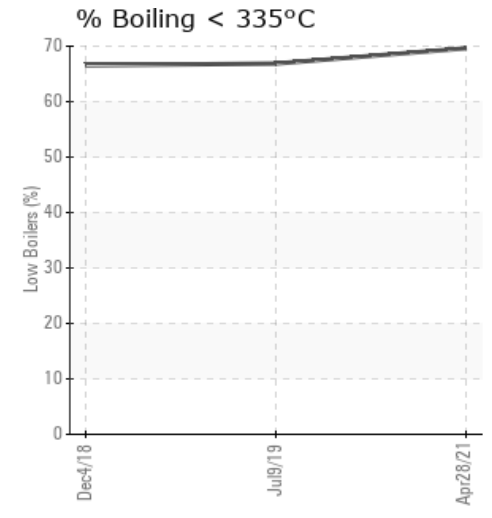
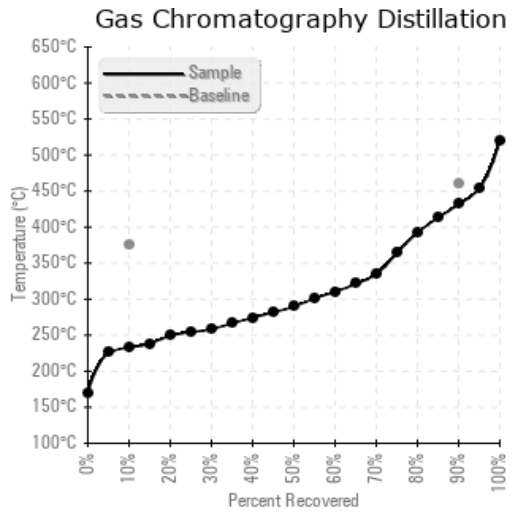
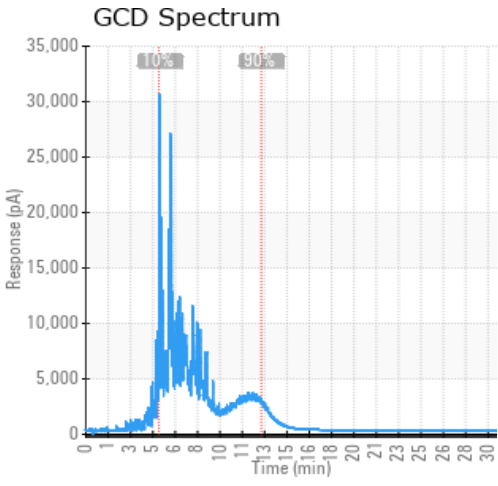
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
04/28/21	05/05/21	30.0y	After Filtering syst	266 / 130	41.7	5.1	0.09	0.042	451 / 233	553 / 290	809 / 431	69.62
07/09/19	07/12/19	20.0y		255 / 124	77.1	5.4	0.140	0.028	445 / 229	558 / 292	818 / 437	66.87
12/04/18	12/20/18	0.0y		255 / 124	41.0	5.0	0.01	0.139	441 / 227	557 / 292	822 / 439	66.55
Baseline Data				399 / 204		32.45			705 / 374		858 / 459	





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
04/28/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/09/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/04/18	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

07/09/19	This system is filled with Esso Thermoil 32. The fluid is in good condition and suitable for further use. The low 10% GCD temperature in combination with high boil-off % below 335 degrees C indicates thermal degradation of the fluid which is normal for these types of organic fluids. Venting of low boiler vapor to atmosphere is recommended as part of preventative maintenance. Please re-sample in 12 months. (GCD) 10% Distillation Point is severely low. (GCD) 90% Distillation Point is severely low. COC Flash Point is severely low. Visc @ 40°C is severely low.
12/04/18	This analysis report serves as the baseline reference for top-up with Petro-Therm. The fill of the system is a mix of Esso Oil 1156 and Thermoil 32. Interpretation of fluid condition is based on a generic ISO VG 5 fluid. Considering the main part of the fill is Esso Oil 1156, the condition reflected in this analysis report is normal. In this case the important parameters are Acid Number, water content, Fe (corrosion) and Pentane Insoluble (solids) content. The AN and water content are low. There is no Fe which means corrosion is not taking place. Solids content is moderately low. Please re-sample in 12 months. List oil service life, operating temperature, blanket gas info and system volume on the analysis request form when sending in the next sample. (GCD) 10% Distillation Point is severely low. COC Flash Point is severely low. Visc @ 40°C is severely low. (GCD) 90% Distillation Point is abnormally low.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.