

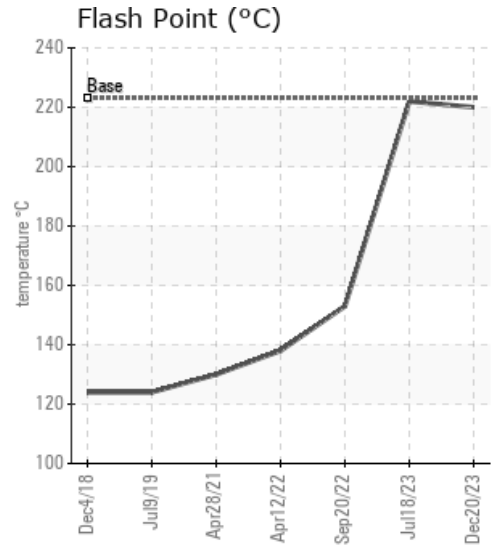
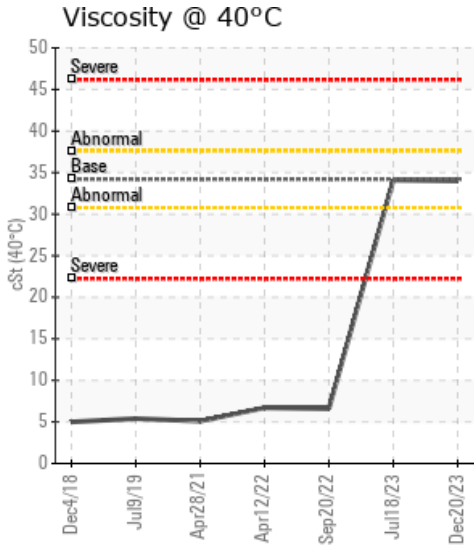
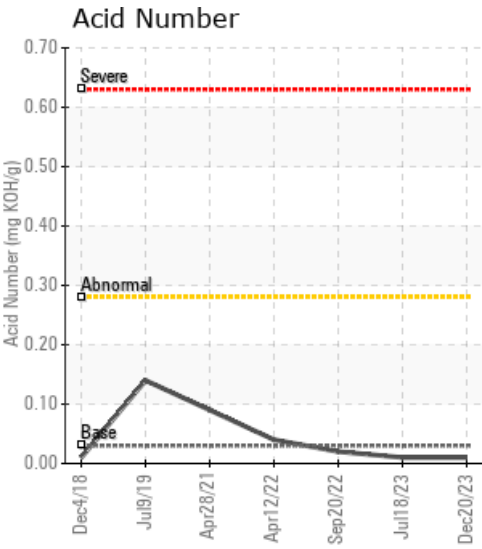
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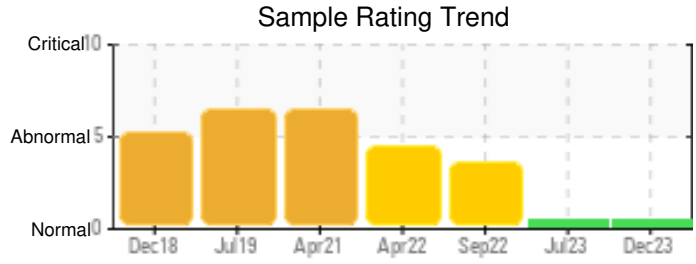
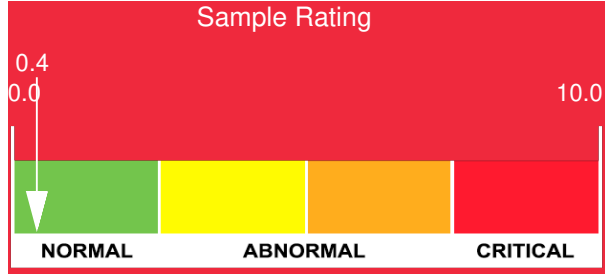
Customer: PTRHTF20208	System Information	Sample Information
Plains Midstream Canada PO Box 3210 Range Road 221 Fort Saskatchewan, AB T8L 2T2 CA Attn: David Eastman Tel: E-Mail:	System Volume: 1000 ml Bulk Operating Temp: 500F / 260C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02605484 Analyst: Terry Veenstra Sample Date: 12/20/23 Received Date: 12/27/23 Completed: 01/04/24 Terry Veenstra terry.veenstra@HFSinclair.com

Recommendation: Sample indicates that oil is in good condition and suitable for further use. Resample in 6 months.

Comments:

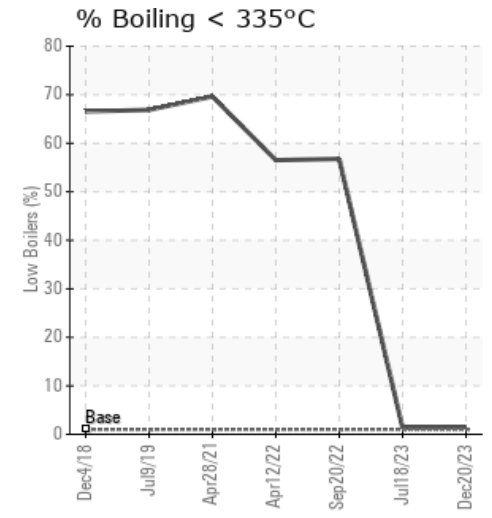
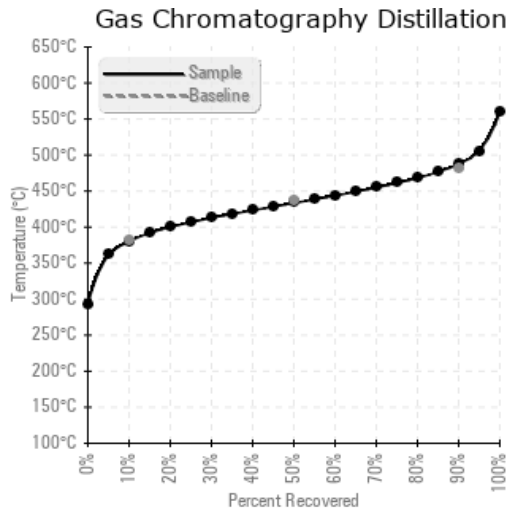
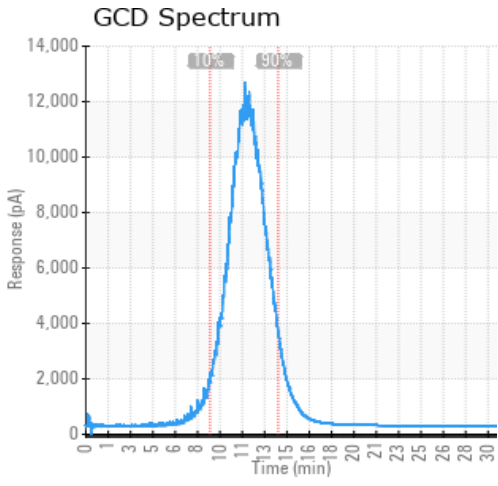
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/20/23	12/27/23	7.0m	after filtering syst	428 / 220	125	34.0	0.01	0.207	716 / 380	812 / 433	910 / 488	1.49
07/18/23	07/27/23	0.2m	after filtering sys	432 / 222	238.9	34.1	0.01	0.039	720 / 382	814 / 434	909 / 487	1.35
09/20/22	09/26/22	30.0m	AFTER FILTERING	307 / 153	202.2	6.6	0.02	0.019	455 / 235	596 / 314	850 / 454	56.77
04/12/22	04/18/22	30.0m	after filtering syst	280 / 138	174.5	6.7	0.04	0.022	454 / 235	598 / 314	854 / 457	56.51
04/28/21	05/05/21	30.0m	After Filtering syst	266 / 130	41.7	5.1	0.09	0.042	451 / 233	553 / 290	809 / 431	69.62
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	
12/20/23	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
07/18/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09/20/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
04/12/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
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	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	
07/18/23	Sample indicates that oil is in good condition and suitable for further use. Resample in 6 months.
09/20/22	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 6 months. (GCD) 10% Distillation Point is severely low. Visc @ 40°C is severely low. COC Flash Point is abnormally low.
04/12/22	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. COC Flash Point is severely low. Visc @ 40°C is severely low.
04/28/21	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%. (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.

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