

[Orlen Upstream Canada / 16-7-63-5W6] 1850 STABILIZER REBOILER

Customer: PTRHTF20262
 Orlen upstream Canada Ltd.
 850 2 St. SW
 Calgary, AB T2P 0R8 CA
 Attn: Ian Stewart
 Tel:
 E-Mail: ian.stewart@orlenustream.ca

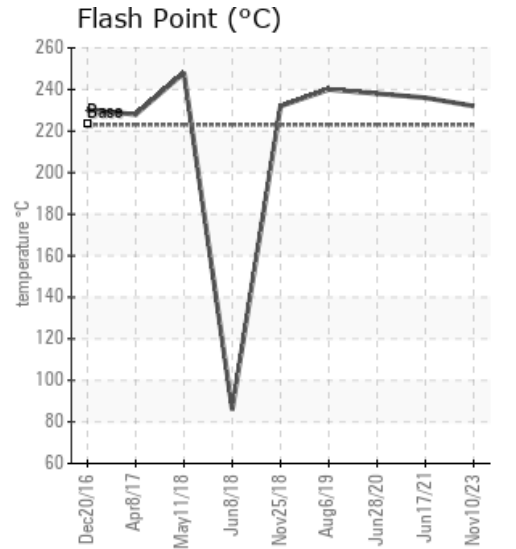
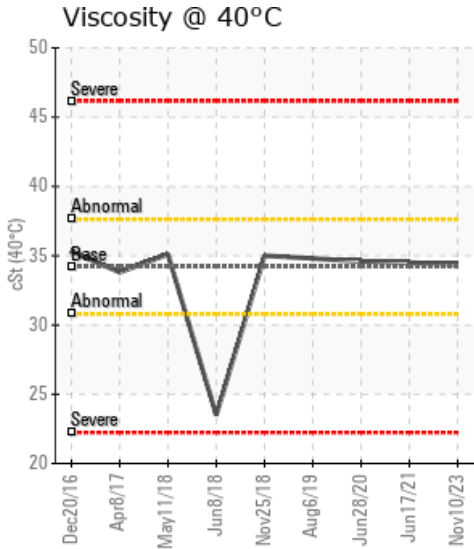
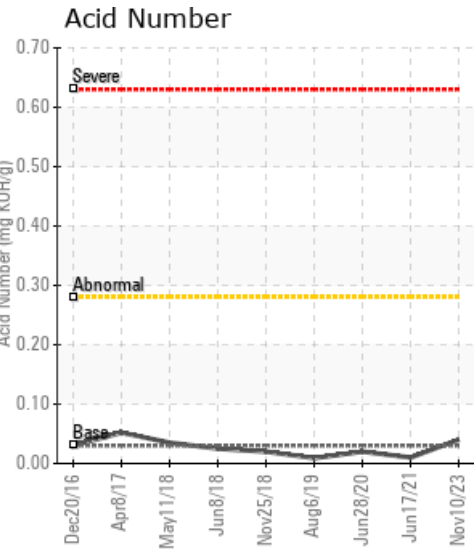
System Information
 System Volume: 24000 ltr
 Bulk Operating Temp: 365F / 185C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make: ALCO

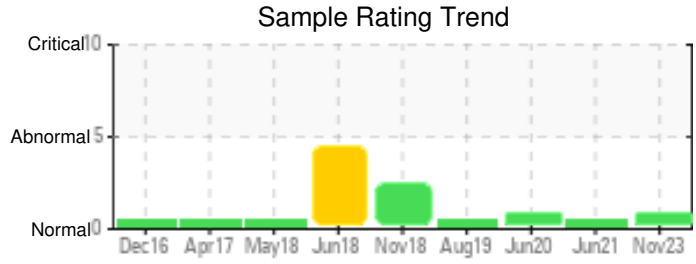
Sample Information
 Lab No: 02600271
 Analyst: Clinton Buhler
 Sample Date: 11/10/23
 Received Date: 12/01/23
 Completed: 12/05/23
 Clinton Buhler
 Clinton.Buhler@HFSinclair.com

Recommendation: Sample results indicate the fluid is in suitable condition for continued service. Please re-sample in 12 months.

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

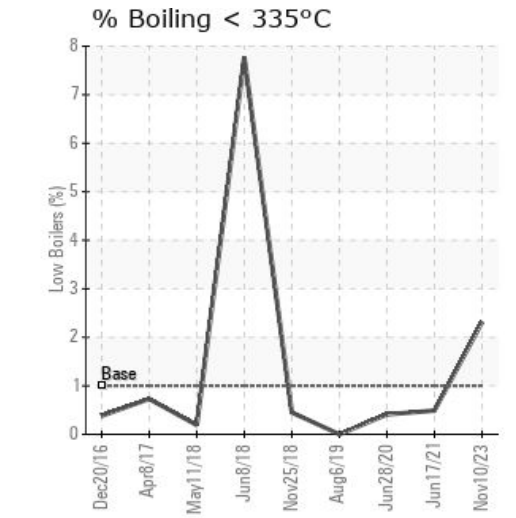
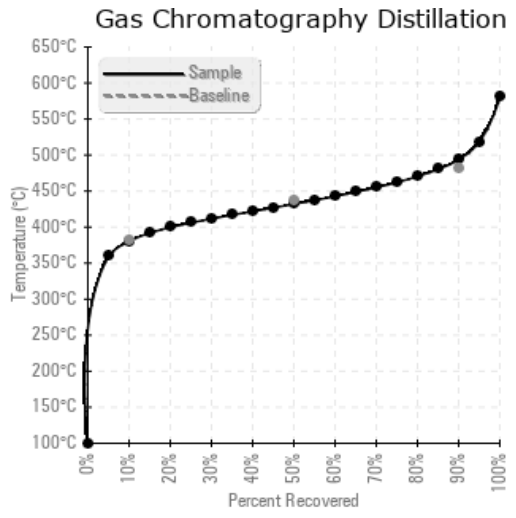
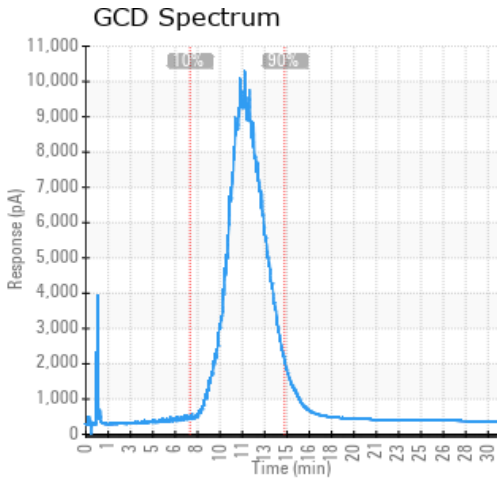
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/10/23	12/01/23	0.0m		450 / 232	3	34.4	0.04	0.034	717 / 380	810 / 432	920 / 494	2.31
06/17/21	06/28/21	48.0m	Sight glass	457 / 236	5.1	34.5	0.01	0.057	717 / 381	798 / 425	924 / 496	0.49
06/28/20	07/13/20	24.0m		460 / 238	11.3	34.6	0.02	0.050	731 / 389	817 / 436	921 / 494	0.41
08/06/19	08/30/19	14.0m	SIGHT GLASS	464 / 240	7.3	34.8	0.009	0.091	718 / 381	801 / 427	903 / 484	0.00
11/25/18	12/14/18	6.0m		450 / 232	484.4	35.0	0.02	0.093	723 / 384	812 / 433	919 / 493	0.45
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
11/10/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/17/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/28/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/06/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/25/18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	1
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	
06/17/21	Sample results indicate that the fluid is in suitable condition for continued service. Please re-sample in 12 months but please sample from pump discharge rather than from the system site glass. (GCD) 90% Distillation Point is marginally high.
06/28/20	The fluid is in a good condition and suitable for further use. 90% GCD temperature is slightly elevated but related parameters look good. No concern at this time. Please re-sample in 12 months. (GCD) 90% Distillation Point is marginally high.
08/06/19	Sample results indicate that the heat transfer fluid is suitable for continued service. Please re-sample in 12 months
11/25/18	Sample results indicate that the heat transfer fluid is suitable for continued service. Please re-sample in 6 months. Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high. (GCD) 90% Distillation Point is marginally high.

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.