

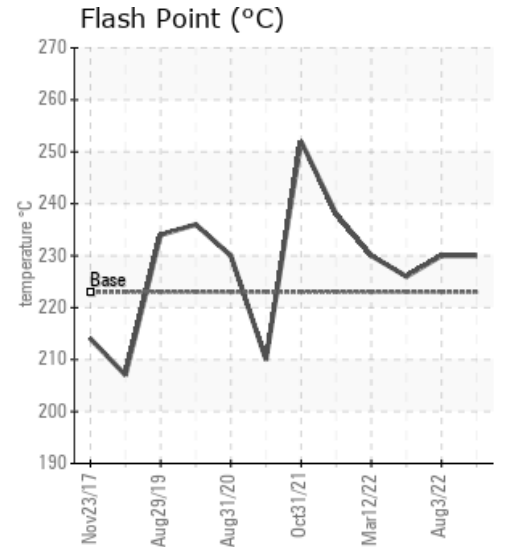
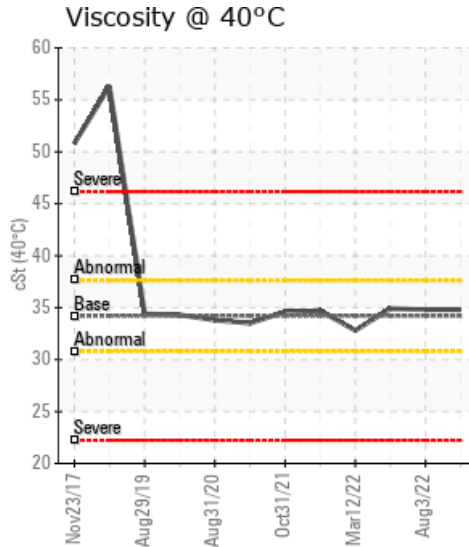
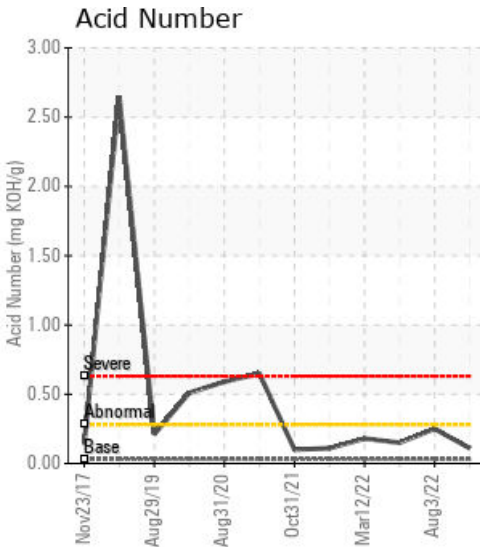
## [Orlen Upstream Canada / 16-7-63-5W6] STABILIZER REBOILER 1350

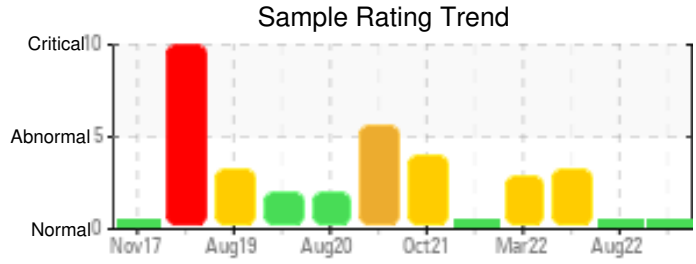
Customer: PTRHTF20262	System Information	Sample Information
Orlen upstream Canada Ltd. 850 2 St. SW Calgary, AB T2P 0R8 Canada Attn: Bret Elchyson Tel: E-Mail: Bret.Elchyson@orlenupstream.ca	System Volume: 20000 ltr Bulk Operating Temp: 365F / 185C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: RUSHTON	Lab No: 02529303 Analyst: Clinton Buhler Sample Date: 12/01/22 Received Date: 12/16/22 Completed: 12/19/22 Clinton Buhler Clinton.Buhler@HFSinclair.com

Recommendation: Sample results indicate the fluid is in suitable condition for continued service. Please re-sample in 6 months.

Comments:

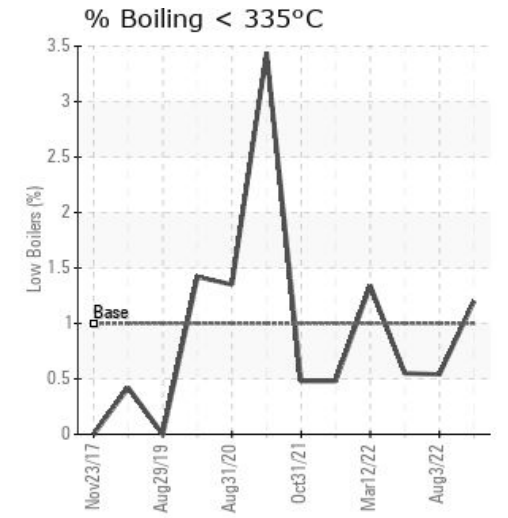
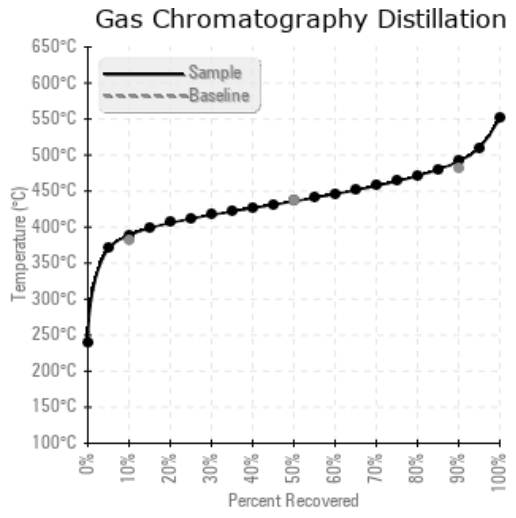
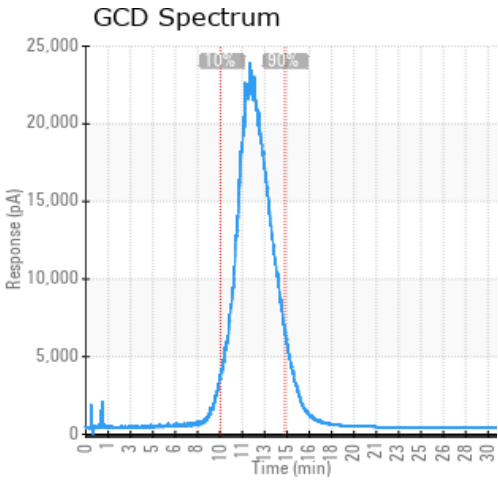
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/01/22	12/16/22	6.0m	off circulation pump	446 / 230	19.9	34.8	0.11	0.147	731 / 388	816 / 436	916 / 491	1.20
08/03/22	08/23/22	0.0m	OFF CIRC PUMP	446 / 230	68.6	34.8	0.25	0.102	731 / 388	815 / 435	913 / 489	0.54
06/08/22	06/24/22	0.0m	off circ pump disch	439 / 226	1029.9	34.9	0.15	0.098	731 / 388	815 / 435	913 / 489	0.55
03/12/22	03/16/22	0.5m	SURFACE OF CONTAINER	446 / 230	699.8	32.8	0.18	0.137	728 / 387	814 / 434	911 / 488	1.34
12/12/21	12/20/21	4.0m		460 / 238	73.7	34.7	0.11	0.086	730 / 388	814 / 435	913 / 489	0.48
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
12/01/22	2	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
08/03/22	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
06/08/22	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	2	0	1	1
03/12/22	1	0	0	0	0	0	0	0	0	0	4	1	1	0	0	0	0	0	61	0	0	0	2	0
12/12/21	0	0	0	0	0	0	0	0	0	0	2	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	
08/03/22	Sample results indicate the fluid is in suitable condition for continued service. Water content has greatly improved, moving down to 68 ppm from 1029 ppm. Please re-sample in 6 months.
06/08/22	Water content has increased to 1029 ppm. Steam needs to be vented from the system's expansion tank to removed this excess water. Otherwise, sample results indicate the fluid is in suitable condition for continued service. Please actively vent system to remove water vapor and then ensure that blanket gas is operational after venting periods. Inspect heater for source of water ingress. Please re-sample in 6 months and only after thorough venting of system.
03/12/22	Although there is some water contamination, sample results suggest the fluid is in suitable condition for continued service. With water at 699 ppm, it is recommended to drain any low lying areas to remove any potential free water. Once in service, water vapor needs to be vented from the system. Boron is a contaminant, possibly from glycol. After venting periods, please ensure blanket gas is operational in the expansion tank. Please re-sample in 6 months Water contamination levels are abnormally high. ppm Water contamination levels are abnormally high. Boron ppm levels are severely high.
12/12/21	Sample results indicate that the fluid is in suitable condition for continued service. The re-sample shows a great improvement in water content which likely indicates the previous sample was compromised. Please re-sample in 12 months.

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