

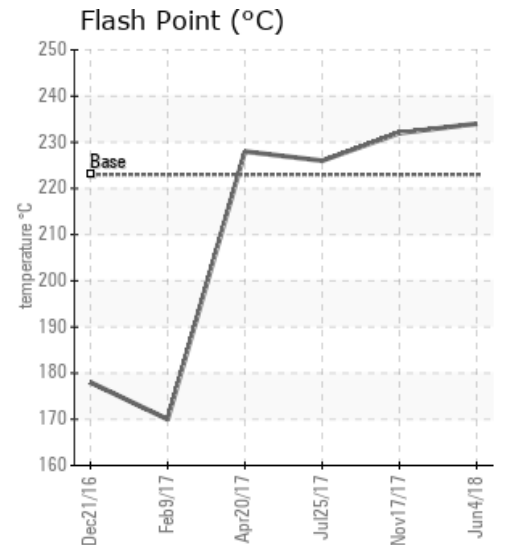
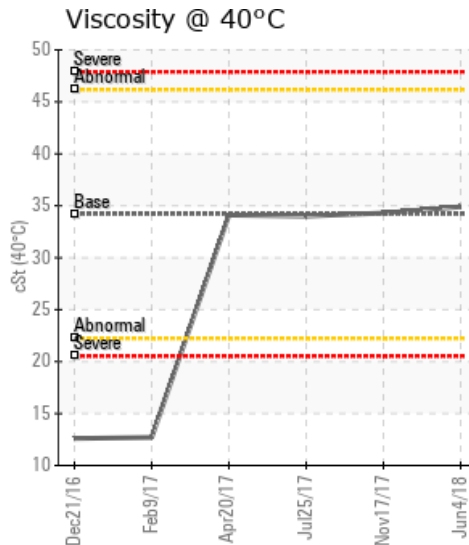
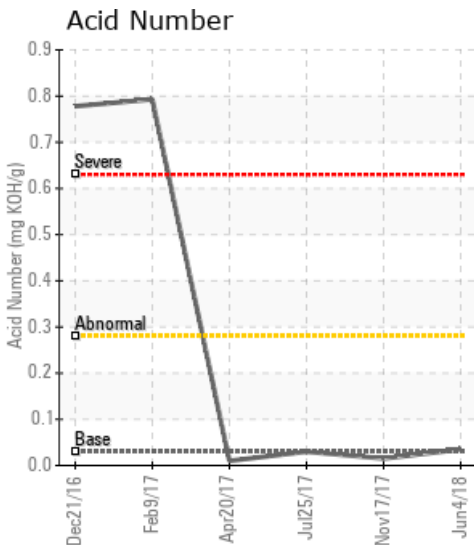
## [CRESCENT POINT ENERGY / 5-14-3-1W2] Glen Ewen Hot Oil System

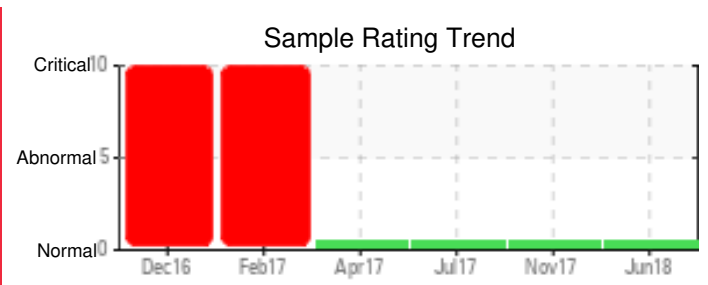
Customer: PTRHTF20180	System Information	Sample Information
CRESCENT POINT ENERGY 801 RAILWAY AVE W CARLYLE, SK S0C 0R0 Canada Attn: Marius Wotta Tel: (306)577-9417 E-Mail: mwotta@crescentpointenergy.com	System Volume: 6940 ltr Bulk Operating Temp: 356F / 180C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: THERMO DESIGN ENG.	Lab No: 02261306 Analyst: Kevin McDermott Sample Date: 06/04/18 Received Date: 01/10/19 Completed: 01/11/19

Recommendation: Fluid condition at time of sample was excellent. Essentially no change from the previous sample Nov 2017. Annual samples are recommended or sooner if the fluid is subjected to severe conditions such as over heating or exposure to air.

Comments:

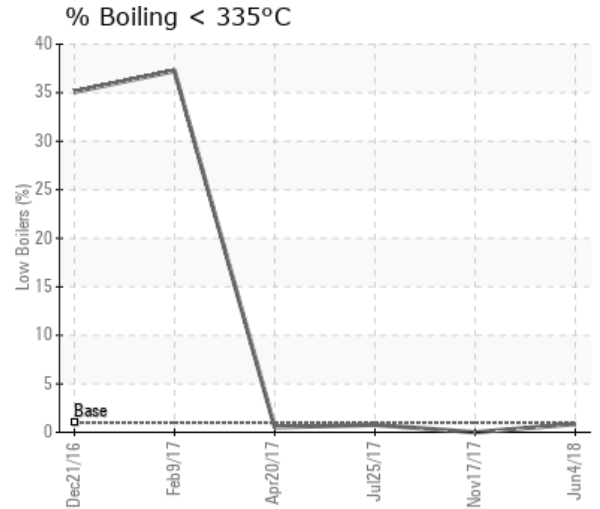
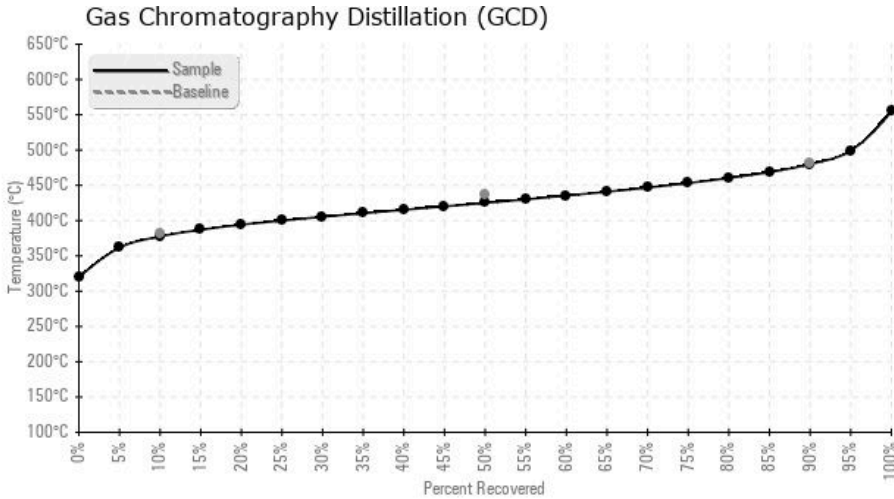
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/04/18	01/10/19	16m		453 / 234	0.00	34.9	0.035	0.024	712 / 378	797 / 425	896 / 480	0.86
11/17/17	11/29/17	0m		450 / 232	6.5	34.3	0.015	0.024	746 / 397	809 / 431	908 / 487	0.00
07/25/17	07/31/17	3m	LOW LEVEL COLUMN	439 / 226	9.6	34.0	0.030	0.043	731 / 389	820 / 438	923 / 495	0.77
04/20/17	04/25/17	2m	LOW LEVEL SHUTDOWN	442 / 228	62.6	34.1	0.01	0.036	731 / 389	820 / 438	923 / 495	0.53
02/09/17	03/02/17	7m	LEVEL SWITCH	338 / 170	213.6	12.7	0.793	1.66	613 / 323	685 / 363	859 / 460	37.25
12/21/16	01/24/17	16m	LOW LVL SENSOR FLOAT	352 / 178	2295.2	12.6	0.778	0.876	612 / 322	722 / 383	877 / 470	35.08
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	
06/04/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
11/17/17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/25/17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
04/20/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
02/09/17	137	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	130	0	0
12/21/16	98	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	130	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	
11/17/17	Fluid remains in very good condition. Given the history of this unit suggest another sample in 6 months or so.
07/25/17	Fluid remains in very good condition, almost identical to the previous sample from April 20, 2017. (GCD) 90% Distillation Point is slightly high. The water content observed in the previous sample has dropped to almost zero.
04/20/17	Fluid is in very good condition. This sample will serve as a good baseline. Important to keep system well sealed and maintain slight pressure on blanket gas. Ensure any top-up fluid is water-free. Given the history of this heater, suggest sampling every 90 days or so until we're comfortable that things are on the right track. Free water 0.2% Slight increase in GCD 10% & GCD 90%.
02/09/17	The water content is much improved from the December sample - most likely because the recent sample is a better representation of the fluid in the active portion of the bath. However the overall fluid condition is very poor and continues to deteriorate. Fluid should be replaced. Very high solids content (particularly iron) indicate corrosion. Pentane Insolubles levels (solids content) severely high. (GCD) % < 335°C is severely high. Acid Number (AN) is severely high. (GCD) 50% Distillation Point is severely low. Visc @ 40°C is severely low which may be due to partial charge of Calflo Synthetic. COC Flash Point is abnormally low. (GCD) 90% & 10% Distillation Point is abnormally low.
12/21/16	Severely high acid number, water content, and solids content. Viscosity is severely low likely due to thermal degradation. GCD profile suggests partial charge of lighter viscosity fluid. The fluid is in poor condition and should be changed out. Water contamination levels are severely high. Pentane Insolubles levels are severely high. (GCD) % < 335°C is severely high. Acid Number (AN) is severely high. Visc @ 40°C is severely low. COC Flash Point is abnormally low. (GCD) 10% Distillation Point is abnormally low. (GCD) 50% Distillation Point is marginally 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.