

CLEAVER BROOKS (SURGE TANK SAMPLE)

Customer: PTRHTF30020
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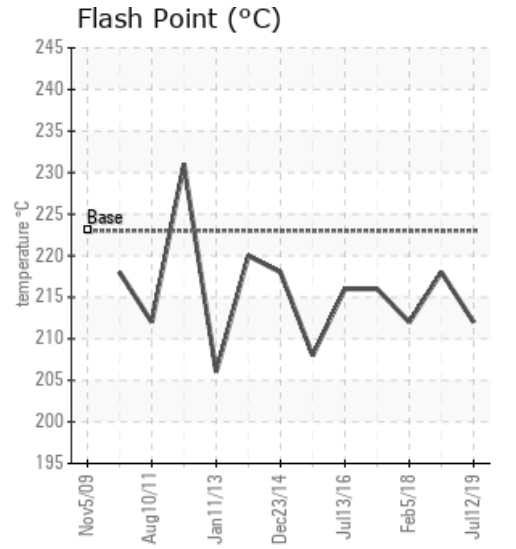
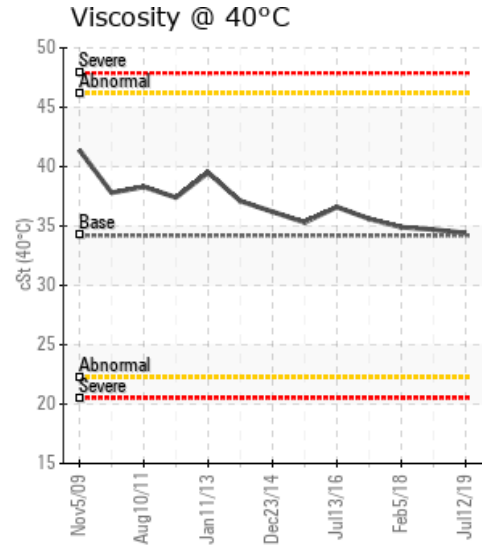
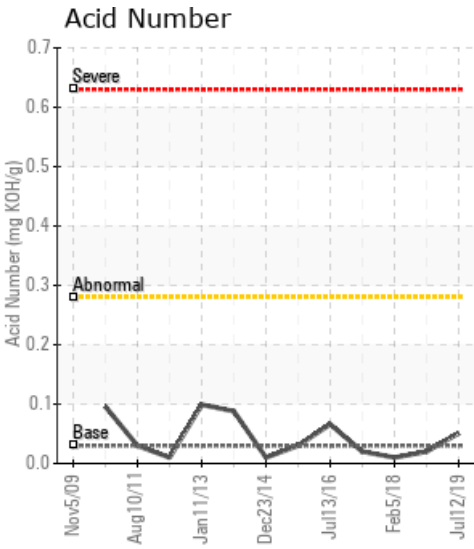
System Information
 System Volume: 10000 ltr
 Bulk Operating Temp: 491F / 255C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make: CLEAVER BROOKS

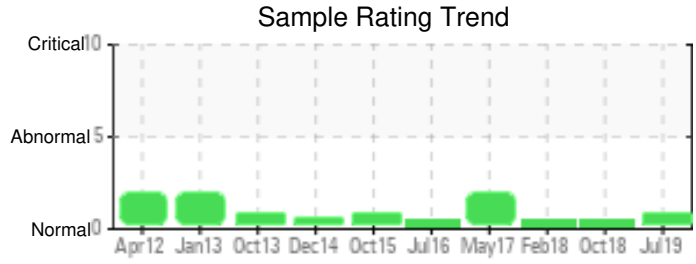
Sample Information
 Lab No: 02297696
 Analyst: Pierre Castagne
 Sample Date: 07/12/19
 Received Date: 07/18/19
 Completed: 07/22/19
 Pierre Castagne
 pierre.castagne@petrocanadalsp.com

Recommendation: You have some carbon buildup (GCD@90%) are high.

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

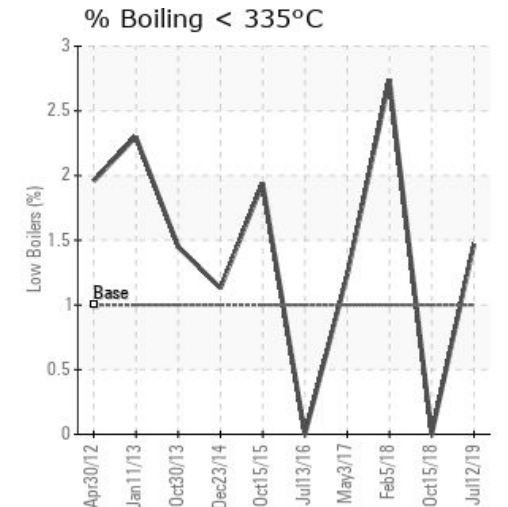
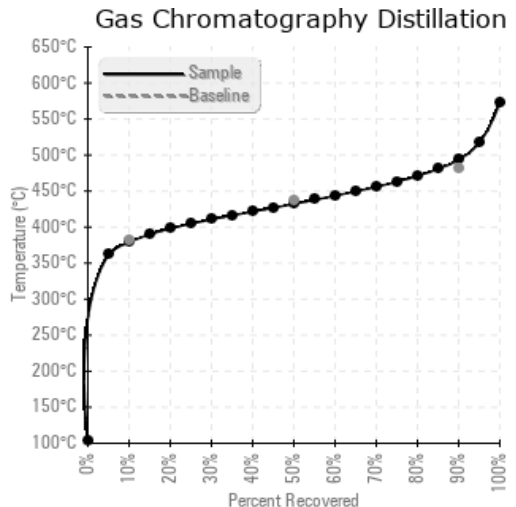
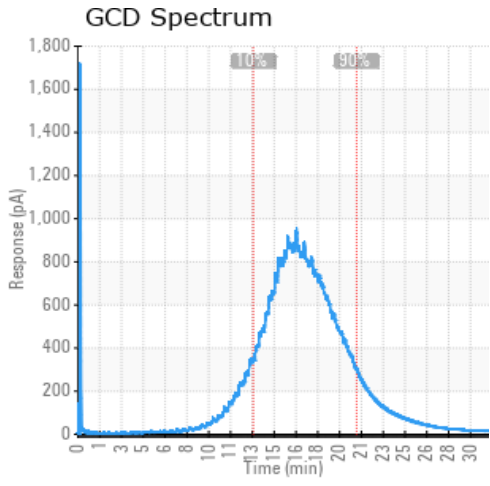
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/12/19	07/18/19	10y		414 / 212	23.2	34.4	0.051	0.076	714 / 379	810 / 432	920 / 493	1.47
10/15/18	10/18/18	10y		424 / 218	16.4	34.7	0.02	0.028	727 / 386	810 / 432	914 / 490	0.00
02/05/18	02/22/18	10y		414 / 212	6.1	34.9	0.01	0.024	704 / 373	809 / 431	915 / 491	2.74
05/03/17	05/11/17	10y	HOT OIL SYSTEM	421 / 216	11.7	35.6	0.02	0.047	713 / 379	814 / 434	944 / 507	1.23
07/13/16	07/18/16	10y	HOT OIL SYSTEM	421 / 216	0.00	36.6	0.066	0.045	720 / 382	803 / 428	901 / 483	0.00
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
07/12/19	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/15/18	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/05/18	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/03/17	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
07/13/16	1	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	
10/15/18	Le fluide caloporteur est ok.
02/05/18	High boilers (GCD @ 90%) increase viscosity, as a result carbon deposit settle in low flow/disturbance areas and foul heat exchange surfaces. Looking at the curve, it appears that a low viscosity oil mixture has occurred.
05/03/17	The Low boilers GCD @10% are within specification (this could be the result of topping-up the oil) although the flash point is lower than the Petro-Therm oil specification (216°C versus 225°C specification), this suggests some oil craking is taking place. The High boilers GCD @ 90% are higher than the specification; this normally causes the viscosity of the oil to increase and carbon deposits. (GCD) 90% Distillation Point is severely high.
07/13/16	Sample is OK for continuous use, Re-sample at appropriate sample date

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