

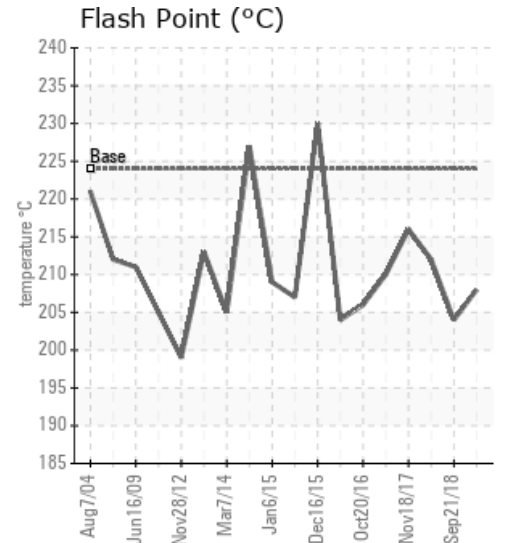
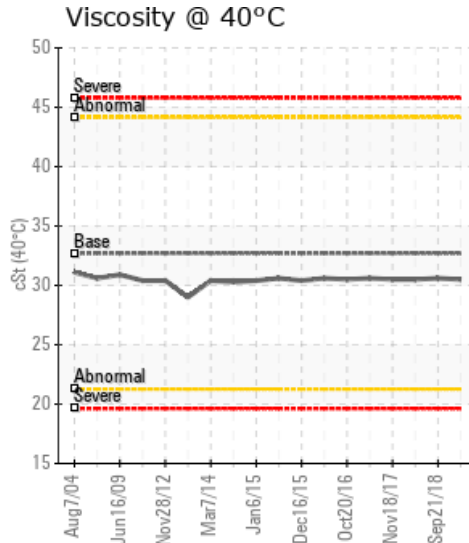
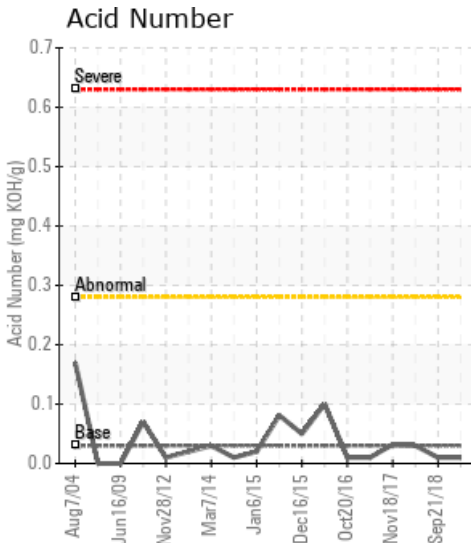
PHASE 1

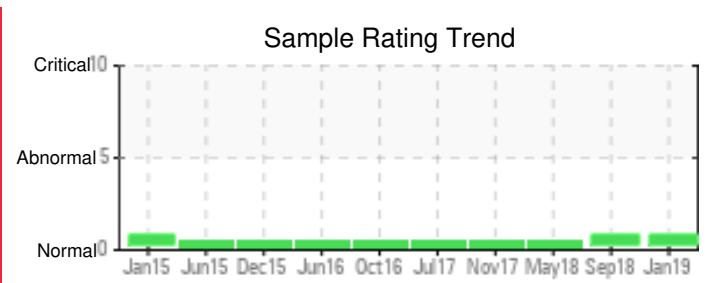
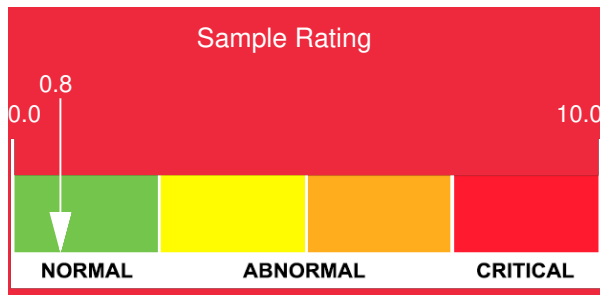
Customer: PTRHTF10092	System Information	Sample Information
REC GROUP 119410 RICK JONES WAY BUTTE (SILVER BOW), MT 59750 USA Attn: ZACK KELLY Tel: (406)496-9717 E-Mail: zack.kelly@recgroup.com	System Volume: 41640 gal Bulk Operating Temp: 425F / 218C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: EXOTHERM	Lab No: 02264531 Analyst: Ron LeBlanc Sample Date: 01/04/19 Received Date: 01/25/19 Completed: 01/29/19

Recommendation: The (GCD) 90% point has dropped from previous sample. The Pentane insolubles have risen compared to last sample. Take a sample in 1 month and purge very well before taking sample.

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

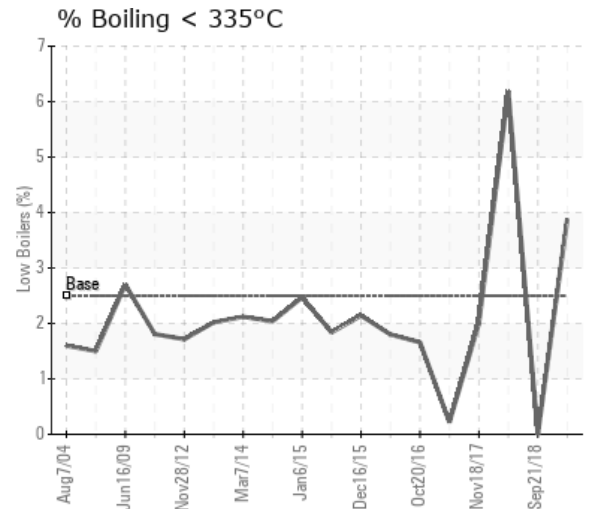
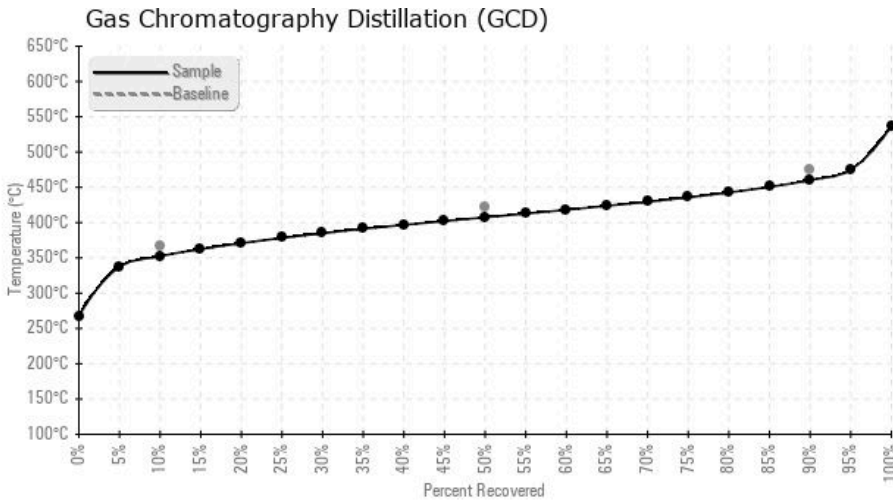
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/04/19	01/25/19	15y		406 / 208	13.9	30.5	0.01	0.060	666 / 352	765 / 407	861 / 460	3.88
09/21/18	10/10/18	0y		399 / 204	12.2	30.6	0.01	0.023	699 / 371	778 / 414	865 / 463	0.00
05/15/18	05/24/18	14y	PHASE1 HOT OIL SURGE	414 / 212	7.0	30.5	0.03	0.030	674 / 357	790 / 421	898 / 481	6.19
11/18/17	12/04/17	13y		421 / 216	8.7	30.5	0.032	0.035	693 / 367	796 / 425	895 / 480	2.00
07/19/17	08/03/17	13y	PH1 HOT OIL	410 / 210	18.8	30.6	0.01	0.042	704 / 373	794 / 424	888 / 476	0.22
10/20/16	11/03/16	18y	HOT OIL RETURN	403 / 206	5.9	30.5	0.01	0.077	690 / 366	789 / 421	883 / 473	1.66
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





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
01/04/19	19	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	16	0
09/21/18	9	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	11	0
05/15/18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
11/18/17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0
07/19/17	8	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	12	0
10/20/16	5	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	11	0
Baseline Data			0	0						0			0	0					0				270	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



Historical Comments	
09/21/18	GCD 90% distillation point slightly low. Could be due to sample point or not enough purge from sample point. Re-Sample in 60 days to observe results. (GCD) 90% Distillation Point is marginally low.
05/15/18	silicon has dropped significantly over last two samples. All other results appear normal. Re-Sample at regular interval.
11/18/17	Sample appears normal. Resample at normal interval.
07/19/17	Sample is normal. No issues detected.
10/20/16	Sample appears normal. Sample in 4-6 months.

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