

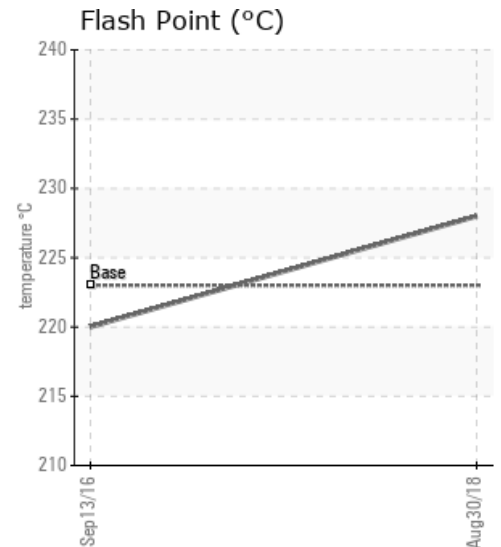
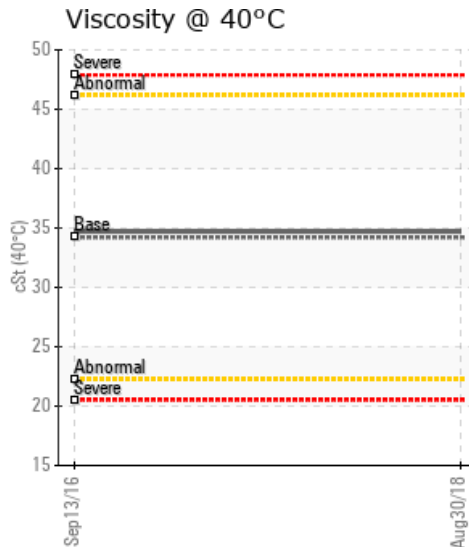
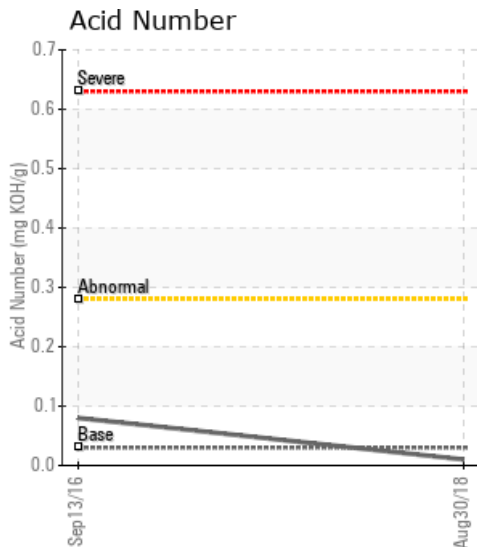
[APACHE CANADA LSD / 14-12-116-6 GAS PLANT 4] BROACH HEATER

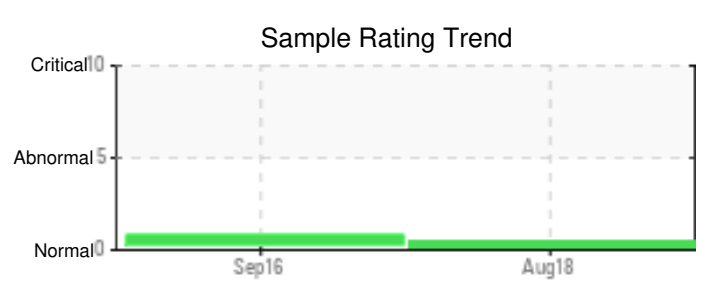
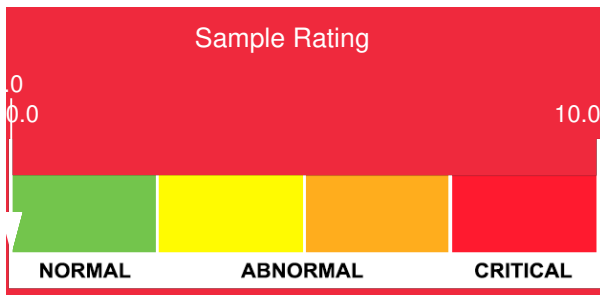
Customer: PTRHTF20008	System Information	Sample Information
Paramount Resources Inc. ZAMA GAS PLANT BOX 25 ZAMA CITY, AB T0H 4E0 Canada Attn: Andrew Lawlor Tel: E-Mail: andrew.lawlor@paramountres.com	System Volume: 80000 ltr Bulk Operating Temp: 327F / 164C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: BROACH	Lab No: 02238023 Analyst: Clinton Buhler Sample Date: 08/30/18 Received Date: 09/07/18 Completed: 10/18/18 To discuss this report contact Clinton Buhler at 780-516-9920

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

Comments:

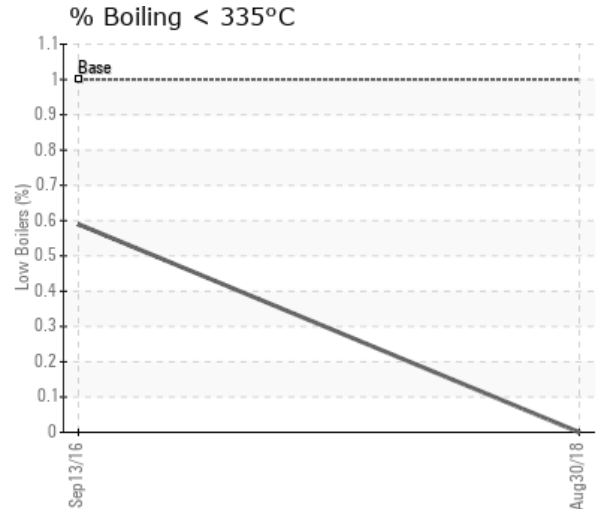
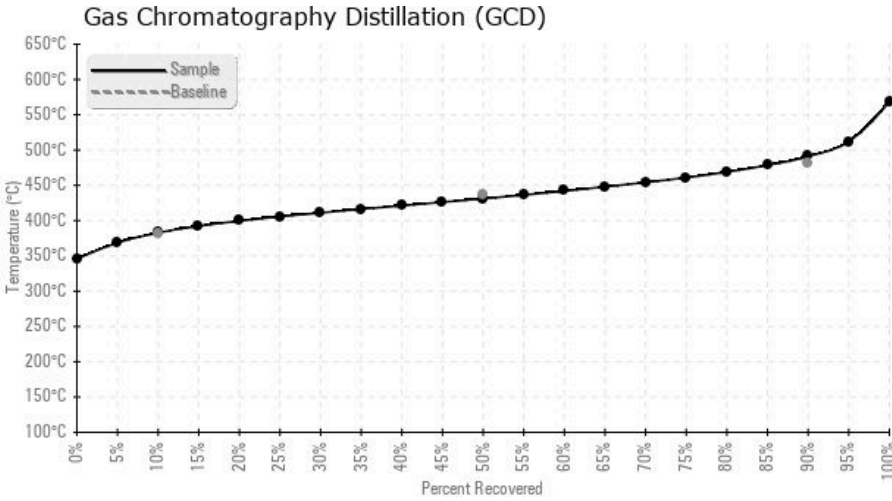
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
08/30/18	09/07/18	4y	DISCHARGE OF PUMP	442 / 228	78.9	34.7	0.01	0.059	721 / 383	808 / 431	916 / 491	0.00
09/13/16	09/21/16	23y	PUMP DISCHARGE	428 / 220	115.7	34.7	0.08	0.083	720 / 382	814 / 434	922 / 495	0.59
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
08/30/18	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/13/16	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	
09/13/16	Sample looks to have a marginally high GCD at 90% indicating some minor thermal degradation. Oil is good for continued service. Resample in 6 months (GCD) 90% Distillation Point is marginally high.

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