

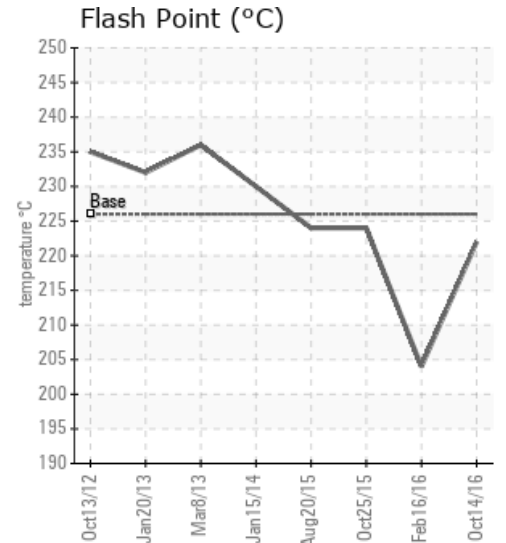
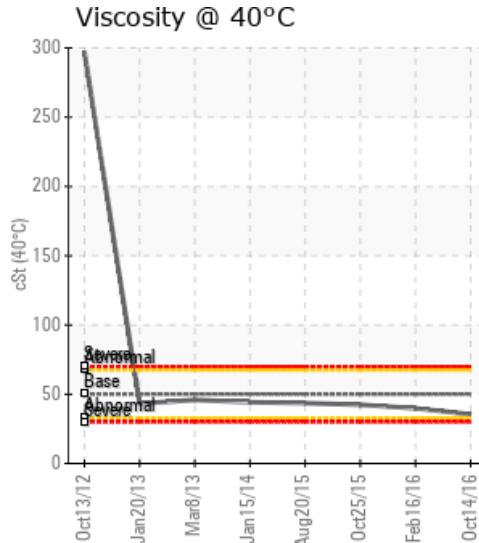
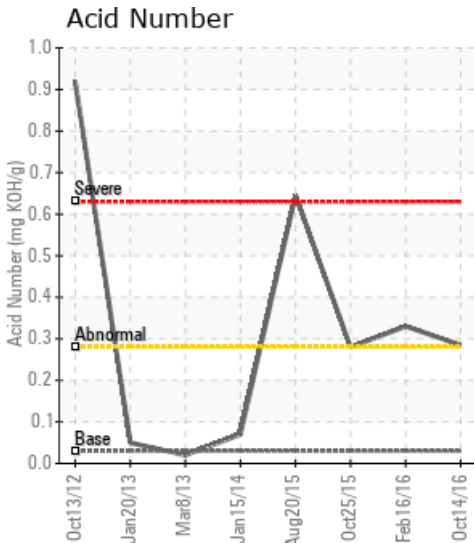
[DEASE DEVINE / LSD 12-27-81-18W6] CREW ENERGY SEPTIMUS PLANT SK-500

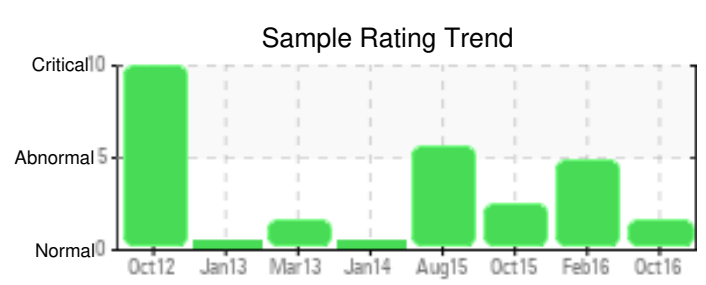
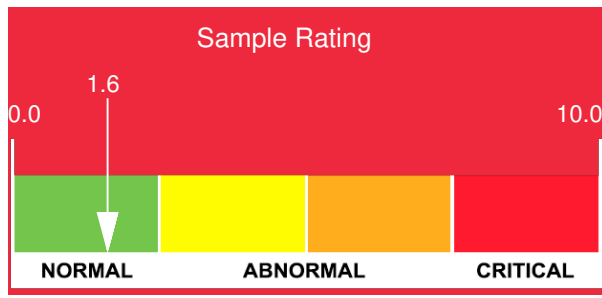
Customer: PTRHTF20109	System Information	Sample Information
Crew Energy Septimus Plant 12-27-81-18W6 8043-100TH AVENUE FORT ST.JOHN, BC V1J 1W2 Canada Attn: Dease Devine Tel: (250)262-1957 E-Mail: deasedevine@crewenergy.com	System Volume: 18000 ltr Bulk Operating Temp: 365F / 185C Heating Source: Blanket: Fluid: SUNOCO SUN HEAT TRANSFER 21 PD Make: NATCO	Lab No: 02131770 Analyst: Bill Quesnel CLS, OMA II, MLA-III, LLA-I Sample Date: 10/14/16 Received Date: 03/10/17 Completed: 03/17/17 To discuss this report contact Bill

Recommendation: Resample at the next service interval to monitor.

Comments: The water content is negligible. There is no indication of any contamination in the component. (GCD) 90% Distillation Point is marginally high. (GCD) 10% Distillation Point is marginally low. The AN level is acceptable for this fluid. The condition of the fluid is suitable for further service.

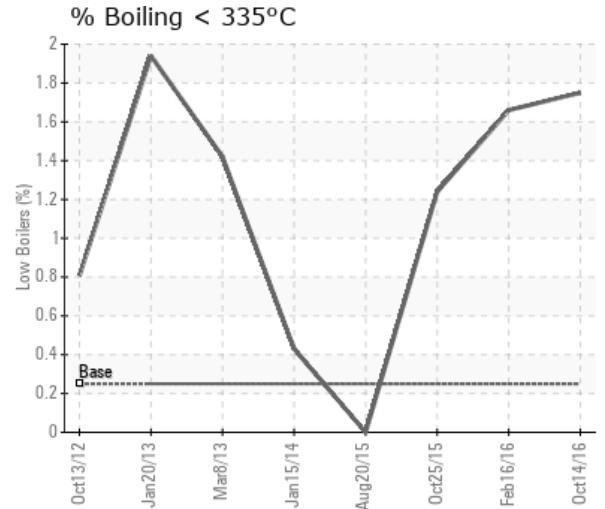
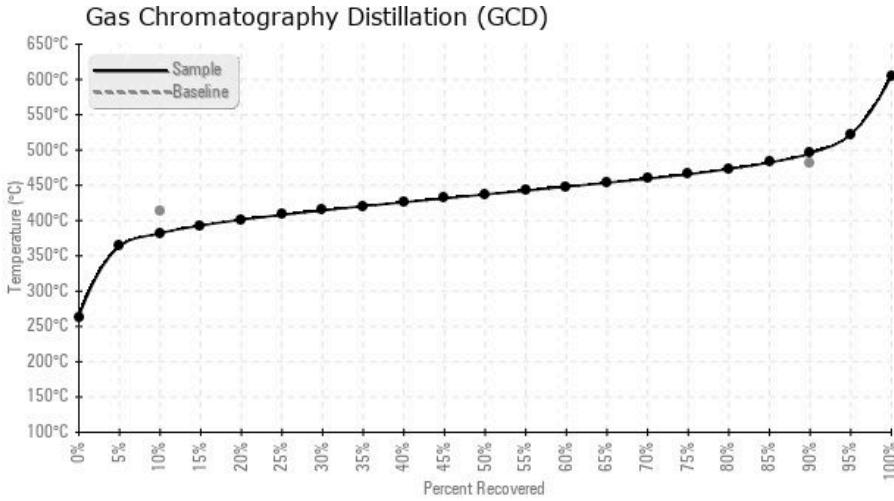
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/14/16	03/10/17	8y		432 / 222	249.3	35.5	0.285	0.224	720 / 382	819 / 437	924 / 495	1.75
02/16/16	02/25/16	0y	SK500	399 / 204	21.1	39.8	0.33	0.579	733 / 390	842 / 450	954 / 512	1.66
10/25/15	10/29/15	0y	12-27-81-18W6M	435 / 224	73.5	42.4	0.28	0.777	733 / 390	831 / 444	923 / 495	1.24
08/20/15	09/15/15	0y	PUMP SUCTION	435 / 224	117.7	43.6	0.645	0.802	748 / 398	841 / 449	931 / 499	0.00
01/15/14	01/23/14	0y	BEFORE PUMP	446 / 230	25.9	44.2	0.07	0.532	735 / 391	830 / 443	913 / 489	0.43
03/08/13	03/18/13	10y	BATH	457 / 236	0.00	45.9	0.02	0.924	717 / 381	814 / 434	955 / 513	1.42
Baseline Data				439 / 226		50.0	0.03		777 / 414		900 / 482	0.25





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
10/14/16	18	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
02/16/16	11	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
10/25/15	57	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	1	0	1	0	0	0
08/20/15	107	0	0	0	0	0	0	2	0	0	1	0	1	0	0	0	1	0	3	0	2	0	0	1
01/15/14	66	0	0	0	0	0	0	2	0	0	1	0	1	0	0	0	1	0	1	0	2	0	1	1
03/08/13	54	0	0	0	0	0	0	4	0	0	0	2	1	0	1	0	1	0	0	0	4	0	1	1
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	
02/16/16	The GCD @90% indicating some heavier ends in the sample. Suspect some sludging is starting to form in the sample likely due to thermal cracking. This would also cause the increase in Pentane Insolubles. Still advising that you continue to monitor by sampling in 6 months time. Pentane Insolubles levels are severely high. (GCD) 90% Distillation Point is marginally high.
10/25/15	The GCD @90% indicating some heavier ends in the sample. Suspect some sludging is starting to form in the sample likely due to thermal cracking. This would also cause the increase in Pentane Insolubles. Continue to monitor. Pentane Insolubles levels are severely high. (GCD) 90% Distillation Point is marginally high.
08/20/15	The Acid number is abnormally high on this sample as is the GCD @90% indicating some heavier ends in the sample. Suspect some sludging is starting to form in the sample likely due to thermal cracking. This would also cause the increase in Pentane Insolubles. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is abnormally high.
01/15/14	Pentane Insolubles levels are abnormally high.
03/08/13	The condition is very similar to the last sample in January. Keep re-sampling at fixed interval to monitor the fluid condition. Pentane Insolubles levels are severely high.