

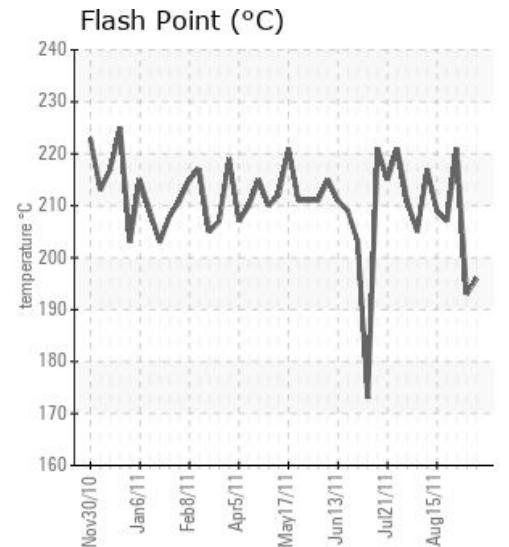
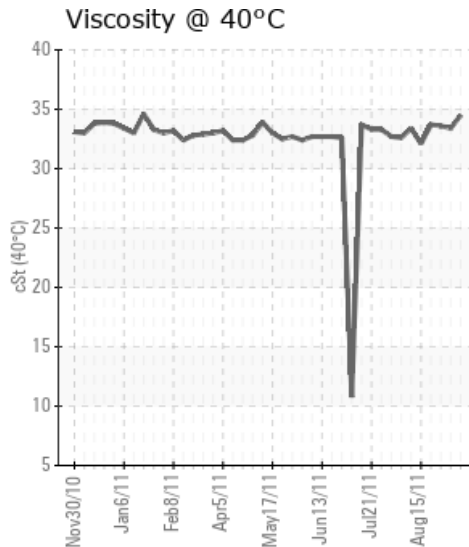
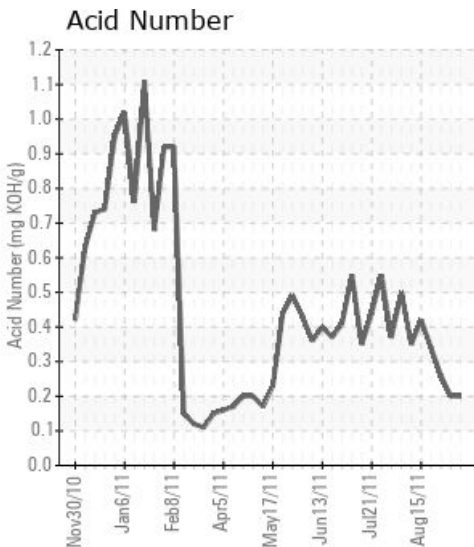
## [Disto Oil Loop] SILANE 4.0 DISTILLATION

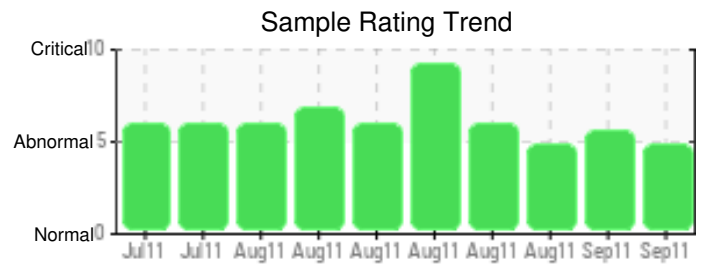
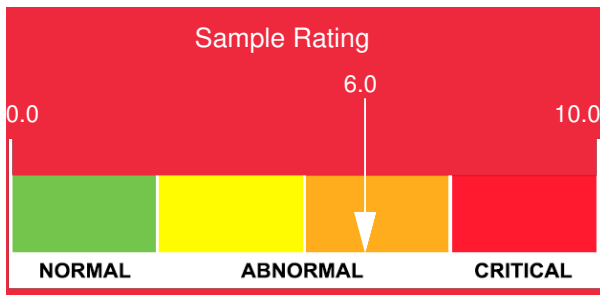
Customer: PTRHTF10093	System Information	Sample Information
<b>REC GROUP</b> 3322 ROAD N N.E. MOSES LAKE, WA 98837 USA Attn: Sam Bright Tel: (509)766-8902 E-Mail: sam.bright@recsilicon.com	System Volume: 50000 gal Bulk Operating Temp: 420F / 216C Heating Source: Blanket: Fluid: Make: COEN	Lab No: I-352158 Analyst: Gaston Arseneault Sample Date: 09/26/11 Received Date: 09/27/11 Completed: 10/03/11 To discuss this report contact Gaston Arseneault at 973-986-6503

### Recommendation:

Comments: Silicon is at a SEVERE LEVEL; Flash point is SLIGHTLY LOW. GRAVIMETRIC SOLIDS is SLIGHTLY HIGH; The oil sample from the expansion tank looks what we have been monitoring in recent months however the heat transfer efficiency is getting worse based on feedback.

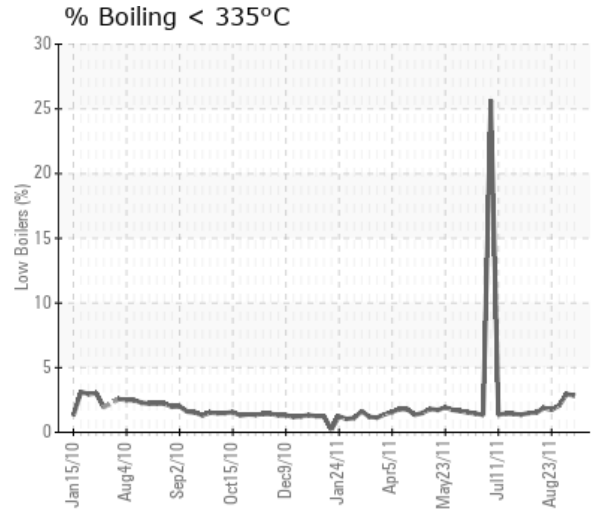
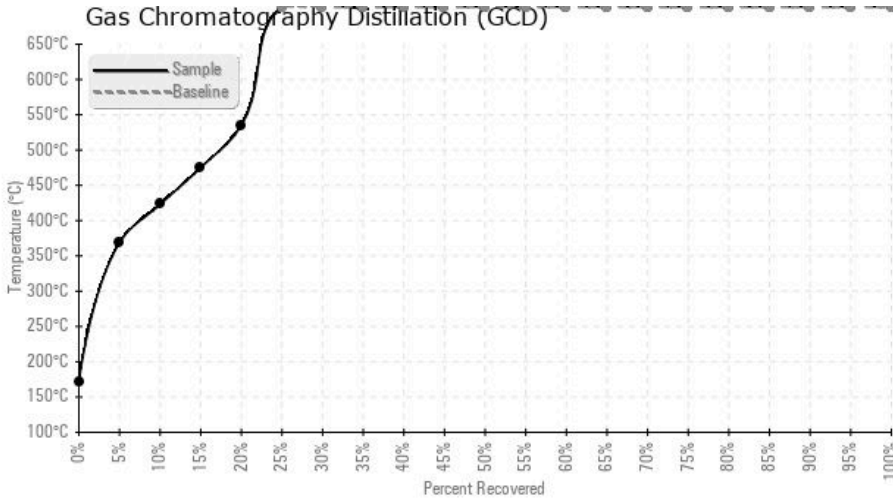
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/26/11	09/27/11		TES REBOILER FLOW ME	412 / 211	4	32.8	0.47	0.157	703 / 373	795 / 424	888 / 476	1.468
09/26/11	09/27/11		EXPANSION TANK	385 / 196	9	34.5	0.2	0.235	696 / 369	793 / 423	887 / 475	2.832
09/25/11	09/28/11		TCS REBOILER	379 / 193	18	33.4	0.2	0.207	695 / 369	793 / 423	887 / 475	2.962
08/29/11	09/07/11		HOT OIL EXPANSION DR	430 / 221	14	33.6	0.26	0.159	700 / 371	796 / 424	889 / 476	2.075
08/23/11	08/24/11		4.0 MCD PUMP #2	405 / 207	167	33.7	0.34	0.304	701 / 372	796 / 424	888 / 476	1.741
08/15/11	08/17/11		EXPANSION TANK	408 / 209	368	32.1	0.42	0.237	699 / 371	796 / 424	889 / 476	1.882
Baseline Data												





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	
09/26/11	8	0	0	0	0	0	1	0	0	0	408	0	0	0	0	0	0	0	0	1	0	0	15	0	
09/26/11	7	0	0	0	0	0	1	0	0	0	245	0	0	0	0	0	0	0	0	0	0	0	17	0	
09/25/11	8	0	0	0	0	0	0	0	0	0	200	2	0	0	0	0	0	0	1	0	0	0	8	0	
08/29/11	6	0	0	0	0	0	1	0	0	0	298	0	0	0	0	0	0	0	0	0	0	0	11	2	
08/23/11	11	0	0	0	0	0	1	15	0	0	363	0	0	0	0	0	0	0	4	2	15	0	18	8	
08/15/11	8	0	0	0	0	0	1	9	0	0	212	2	0	0	0	1	0	0	0	0	9	0	12	5	
Baseline Data																									

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



Historical Comments	
09/26/11	
09/25/11	
08/29/11	
08/23/11	
08/15/11	

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.