

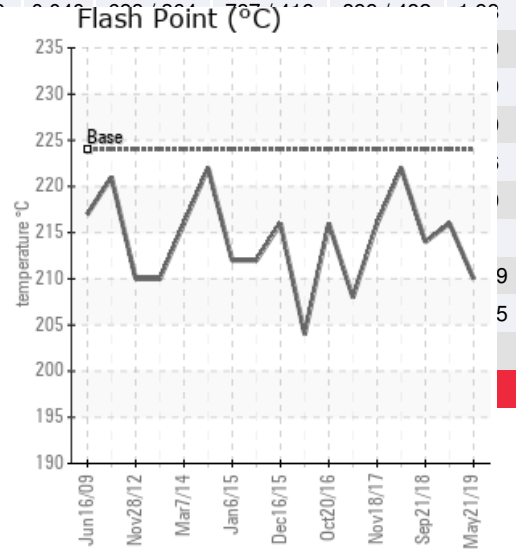
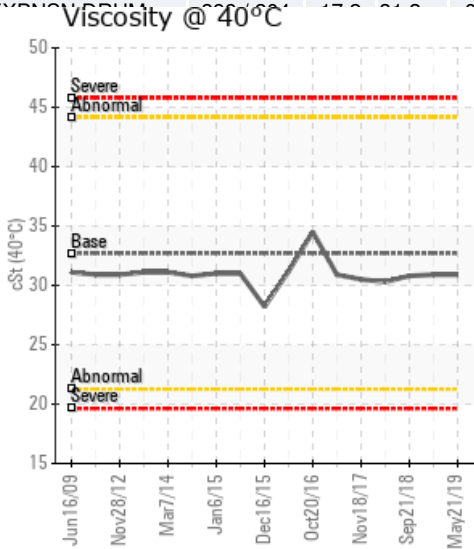
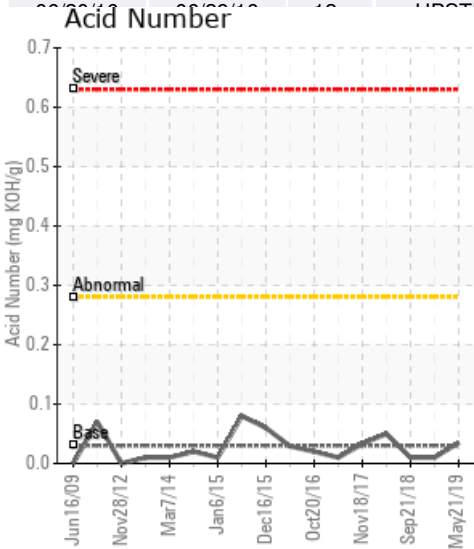
PHASE 2

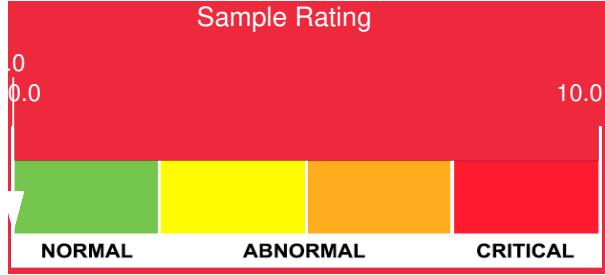
Customer: PTRHTF10092	System Information	Sample Information
REC GROUP 119410 RICK JONES WAY BUTTE (SILVER BOW), MT 59750 USA Attn: Bill Telling Tel: (406)496-9929 E-Mail: bill.telling@recsilicon.com	System Volume: 41640 gal Bulk Operating Temp: 425F / 218C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: EXOTHERM	Lab No: 02289106 Analyst: Ron LeBlanc Sample Date: 05/21/19 Received Date: 06/05/19 Completed: 06/06/19

Recommendation: Sample appears normal. Re-sample at normal interval.

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	%
05/21/19	06/05/19	0y		410 / 210	11.1	30.9	0.035	0.084	691 / 366	789 / 421	884 / 473	1.64
01/04/19	01/25/19	0y		421 / 216	12.4	30.9	0.01	0.041	665 / 352	763 / 406	858 / 459	3.99
09/21/18	10/10/18	0y		417 / 214	8.4	30.8	0.01	0.029	698 / 370	785 / 419	877 / 469	0.00
05/14/18	05/24/18	14y	PHASE2 HOT OIL SURGE	432 / 222	8.9	30.3	0.05	0.034	699 / 371	793 / 423	901 / 483	3.27
11/18/17	12/04/17	13y		421 / 216	7.7	30.5	0.033	0.039	683 / 361	765 / 407	894 / 479	0.26
07/19/17	08/03/17	13y	PH2 HOT OIL	406 / 208	15.7	30.9	0.01	0.015	703 / 373	789 / 421	884 / 473	0.75
10/20/16	11/03/16	13y	HOT OIL RETURN	421 / 216	5.1	34.5	0.02	0.044	695 / 368	798 / 426	897 / 480	1.92





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
05/21/19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
01/04/19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
09/21/18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
05/14/18	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	11	0
11/18/17	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	9	0
07/19/17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
10/20/16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]																								
06/20/16	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
12/16/15	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
06/11/15	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	10	0
01/06/15	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
06/18/14	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
03/07/14	2	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9	0
10/09/13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
11/28/12	4	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	9	0
10/11/11	2	0	0	0	0	0	1	0	0	0	7	0	1	0	0	0	0	0	0	0	0	0	7	0
06/16/09	3	0	0	0	0	0	1	0	0	0	1	0		0	0		0			0	0	0	0	0
Baseline Data			0	0						0			0	0					0				270	

Historical Comments	
01/04/19	(GCD) 90% Distillation Point has dropped from previous sample. Pentane insolubles have increased from previous sample. Take another sample in 1 month. (GCD) 90% Distillation Point is abnormally low.
09/21/18	Sample appears normal. Re-Sample at next scheduled date.
05/14/18	Sample appears normal. Re-Sample at regular interval.
11/18/17	Sample appears normal. Resample at normal interval.
07/19/17	Sample Normal. No issues detected.
10/20/16	Sample appears normal. Sample in 6 months.
06/20/16	Sample appears normal. Resample in 6 months.

12/16/15

01/06/15

Sample appears normal. Resample at normal interval.

06/18/14

Sample appears normal. H2O dropped significantly from 156.9 ppm last sample to 5.7 ppm in current sample. Continue to sample at normal interval.

03/07/14

The oil condition appears to be excellent after 10 years. Please re-sample at next scheduled interval. Silicon has not increased and remains extremely low.

10/09/13

This fluid looks pristine after 10 years. With the exception of 1 additive depleted (out of the whole formulation), every single element or property tested show this fluid looks just like fresh oil. Please keep monitoring regularly.

11/28/12

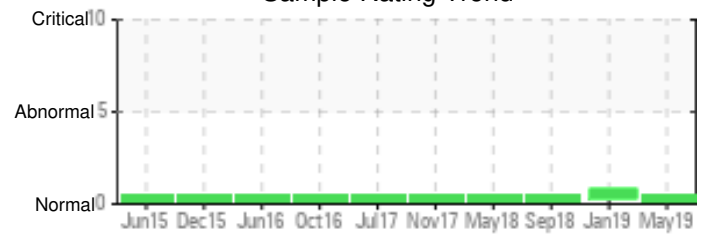
The oil condition remains good. We suggest to perhaps place this system on sampling every 6 months.

10/11/11

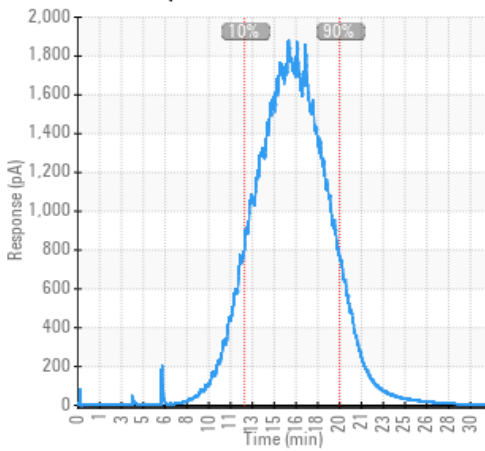
The samples look identical to the last ones taken over 1 year ago. Nothing has changed. Silicon has not risen since the last sample. Keep up the good work and re-sample. Please take advantage of this free service and sample every 6 months.

06/16/09

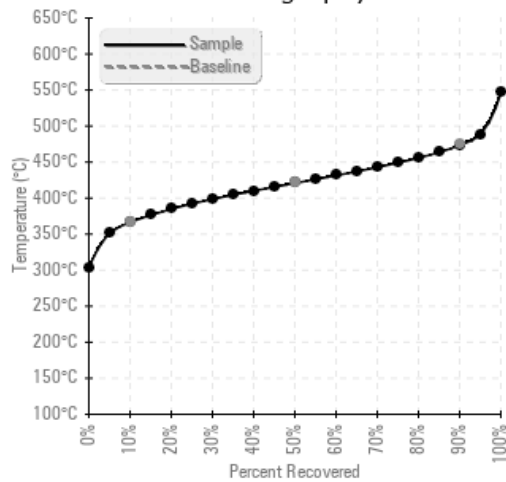
Sample Rating Trend



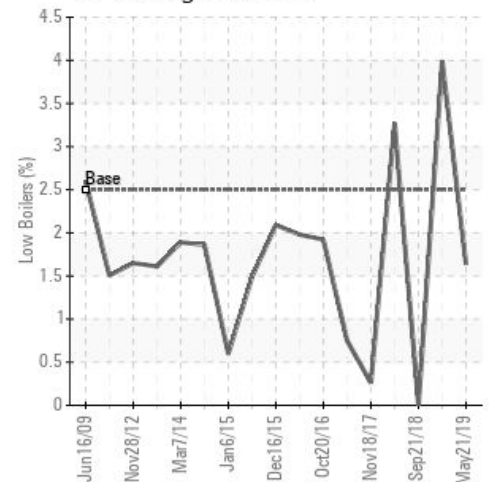
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



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