

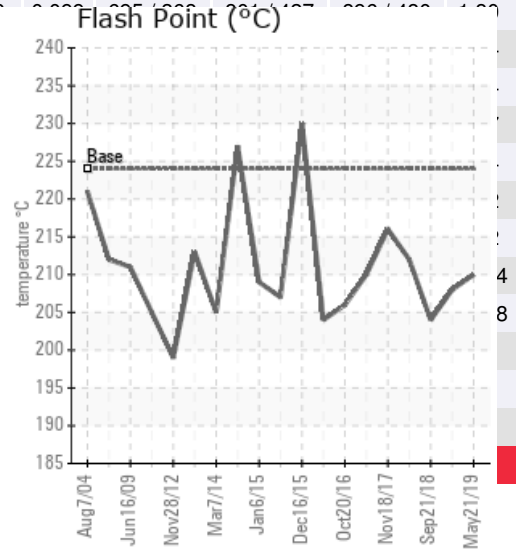
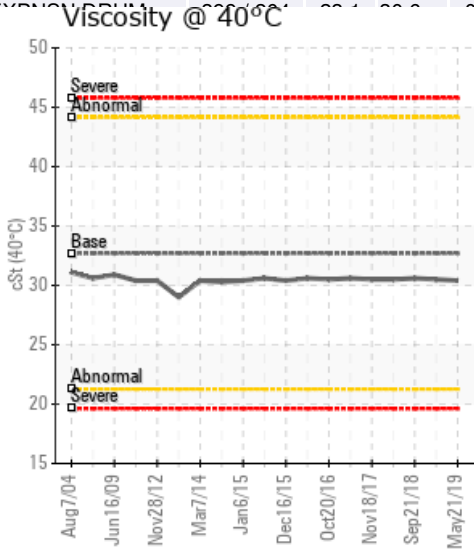
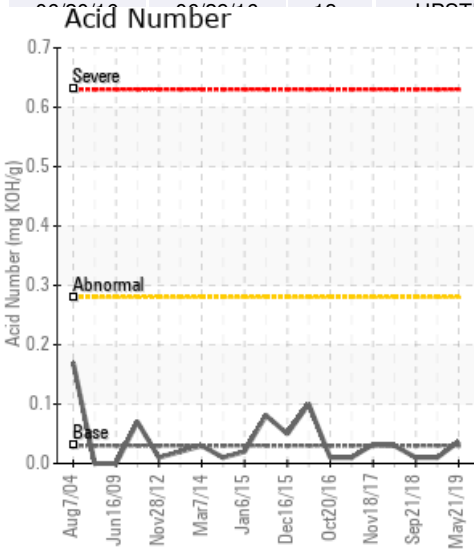
PHASE 1

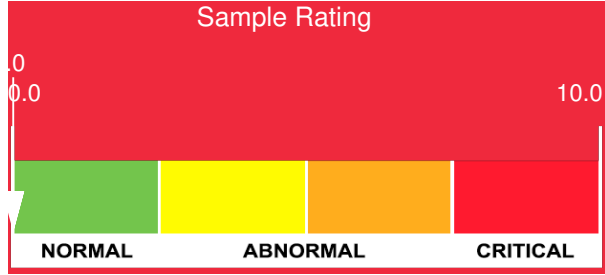
Customer: PTRHTF10092	System Information	Sample Information
REC GROUP 119410 RICK JONES WAY BUTTE (SILVER BOW), MT 59750 USA Attn: Bill Telling Tel: (406)496-9929 E-Mail: bill.telling@recsilicon.com	System Volume: 41640 gal Bulk Operating Temp: 425F / 218C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: EXOTHERM	Lab No: 02289107 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	12.6	30.4	0.037	0.056	687 / 364	788 / 420	884 / 473	2.10
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





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	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
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
Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]																								
12/16/15	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	12	0
06/11/15	11	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	15	0
01/06/15	6	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	16	0
06/18/14	2	0	0	0	0	0	1	0	0	0	2	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	2	1	0	0	0	0	0	0	0	0	0	0	7	0
10/09/13	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	8	0
11/28/12	5	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	12	0
10/11/11	4	0	0	0	0	0	2	0	0	0	5	0	1	0	0	0	0	0	0	0	0	0	9	0
06/16/09	4	0	0	0	0	0	1	0	0	0	1	1		0	0		0			0	0	0	0	0
07/02/07	7	0	0	0	0	0	0	0	0	0	0	3		0	0		0			0	1	0	14	0

Historical Comments

01/04/19	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. (GCD) 90% Distillation Point is marginally low.
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.
06/20/16	Sample appears normal. Resample in 6 months.

12/16/15

01/06/15

Sample appears normal. Resample at regular interval.

06/18/14

Sample appears normal. Water dropped from previous sample (69.1 ppm) to (20.6 ppm) in current sample. Continue to sample at normal interval.

03/07/14

Sorry for the delay on this sample. Everything appears normal and silicon is stable. Overall oil condition is excellent.

10/09/13

This fluid looks great after 16 years. With the exception of 1 additive depleted (out of the whole formulation), every single element or property tested show this fluid looks close to fresh oil. Please keep monitoring regularly.

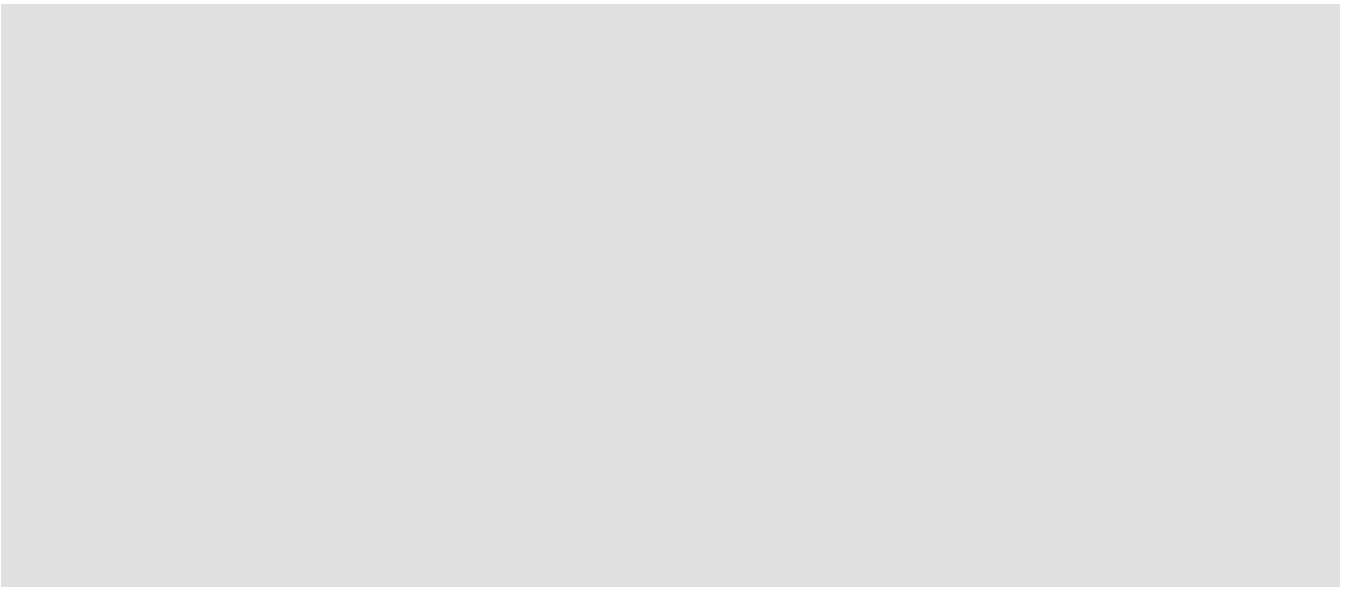
11/28/12

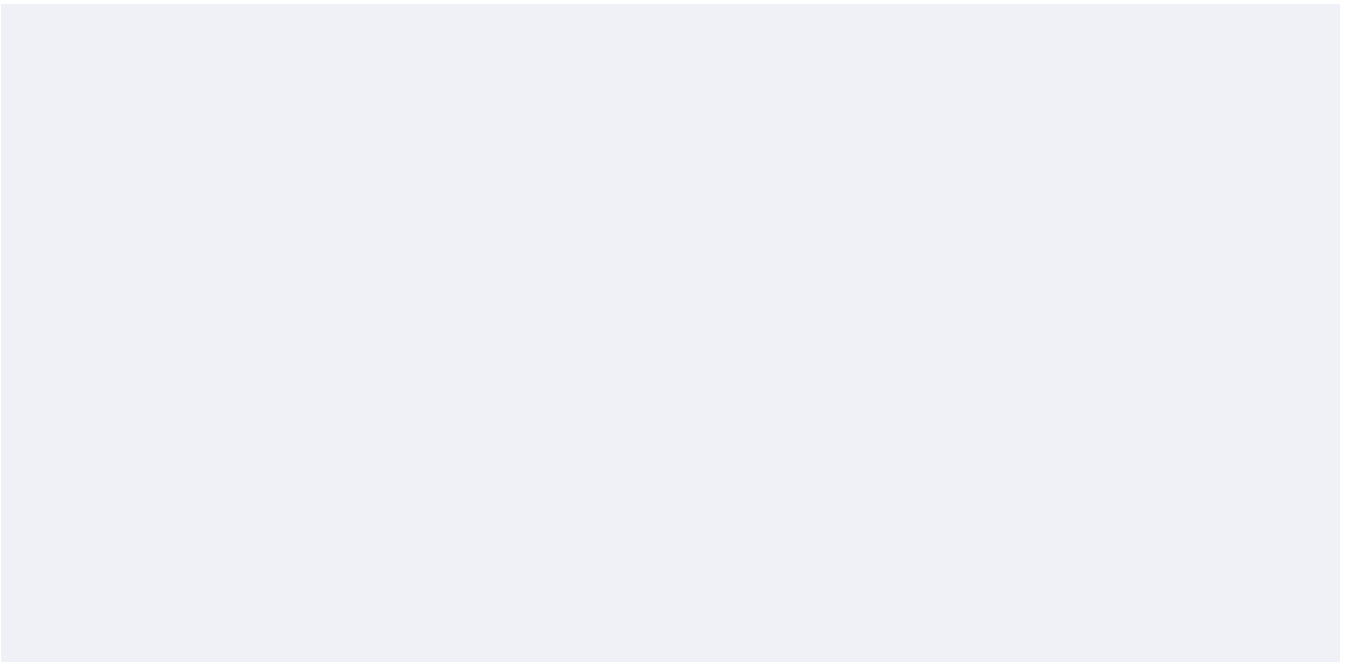
The oil condition remains good. We suggest to perhaps place this system on sampling every 6 months.

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.

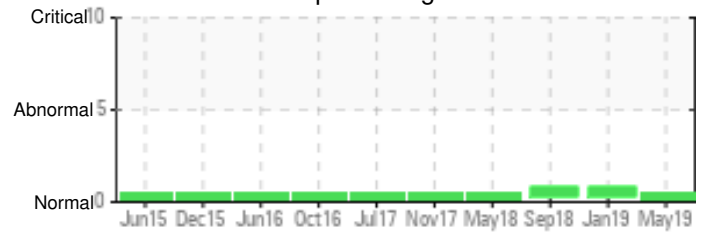
06/16/09



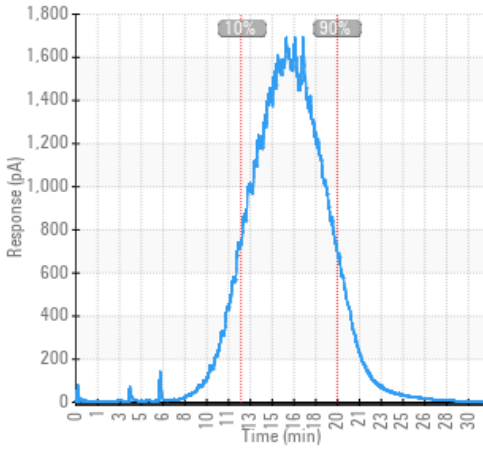


08/07/04

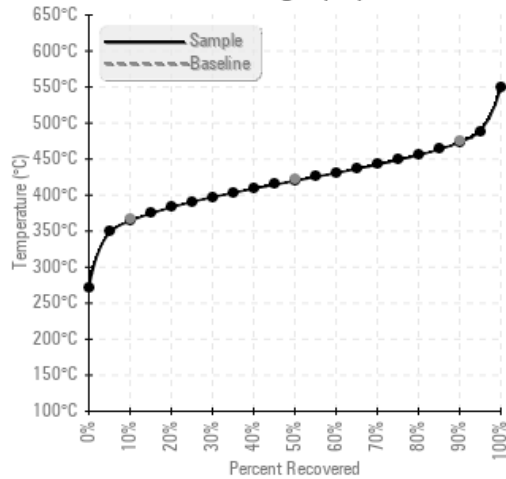
Sample Rating Trend



GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C

