

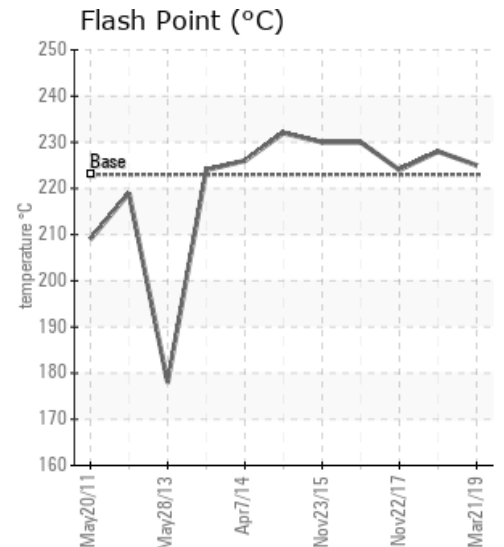
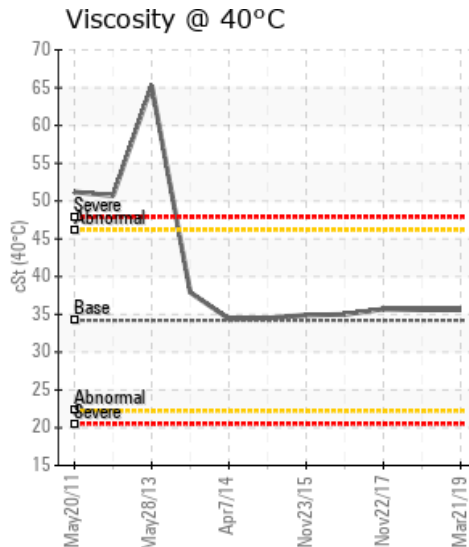
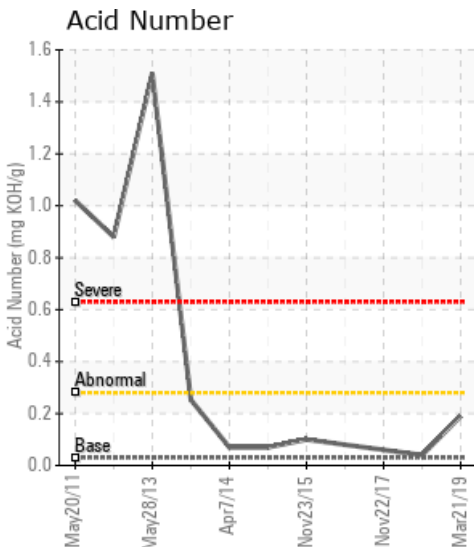
[OBSIDIAN ENERGY / LSD 14-01-42-07 W5] LSD 14-01-42-07W5

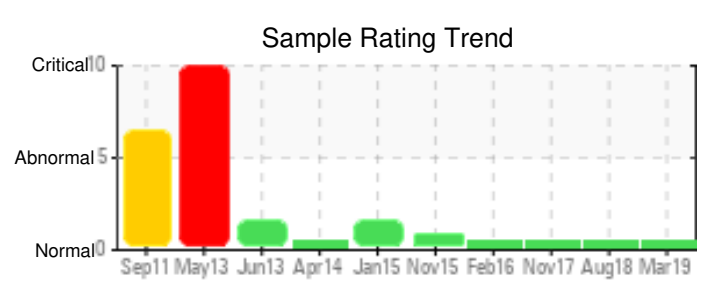
Customer: PTRHTF20039	System Information	Sample Information
BRENNTAG CANADA INC 3124-54TH AVENUE SE CALGARY, AB T2A 0A8 CANADA Attn: Toader Georgiana Tel: E-Mail: gtoader@brenntag.ca	System Volume: 12000 ltr Bulk Operating Temp: 365F / 185C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02276135 Analyst: Terry Veenstra Sample Date: 03/21/19 Received Date: 03/29/19 Completed: 04/09/19

Recommendation: This oil appears to be in good condition and is suitable for further use. Resample in 6 months.

Comments:

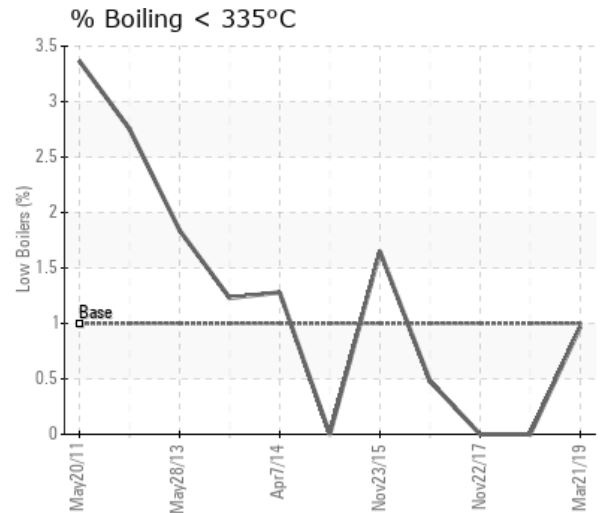
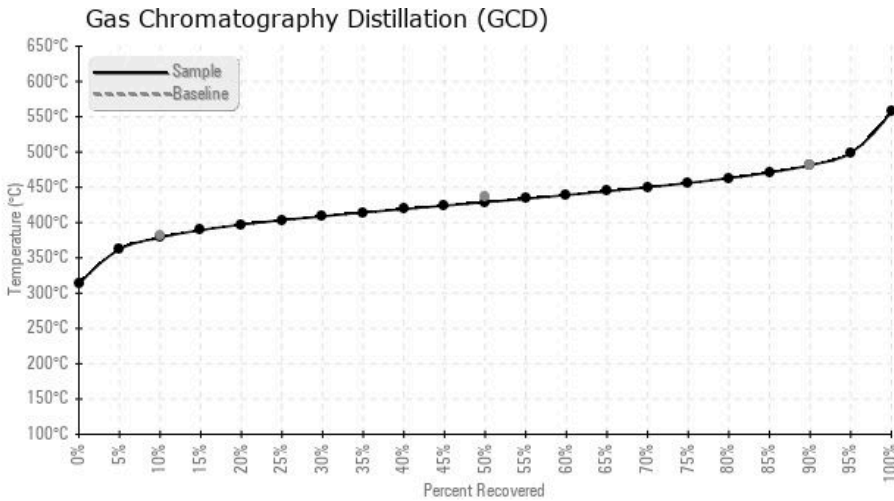
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/21/19	03/29/19	12y	HOT OIL SKID	437 / 225	13.0	35.6	0.190	0.074	714 / 379	804 / 429	899 / 481	0.97
08/02/18	08/14/18	11y	HOT OIL SKID	442 / 228	21.2	35.6	0.04	0.084	716 / 380	802 / 428	900 / 482	0.00
11/22/17	12/06/17	10y		435 / 224	15.6	35.7	0.06	0.309	710 / 377	793 / 423	912 / 489	0.00
02/18/16	03/10/16	0y	PUMP DISCHARGE	446 / 230	0.00	35.0	0.08	0.145	717 / 381	810 / 432	907 / 486	0.48
11/23/15	12/04/15	4y	HOT OIL PUMP	446 / 230	9.5	34.9	0.10	0.626	707 / 375	801 / 427	897 / 481	1.65
01/13/15	02/18/15	8y	HOT OIL SKID	450 / 232	95.3	34.5	0.07	0.701	713 / 378	796 / 424	913 / 490	0.00
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
03/21/19	13	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
08/02/18	11	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
11/22/17	16	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
02/18/16	10	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
11/23/15	11	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
01/13/15	49	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0	0	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

08/02/18	Fluid condition remains excellent. Suggest continue to submit samples annually to monitor fluid condition - sooner if fluid gets exposed to severe conditions.
11/22/17	Fluid remains in excellent condition. Suggest to submit annual samples to proactively monitor fluid condition.
02/18/16	Fluid is in very good condition. Continue with annual samples or more frequent if process conditions become severe.
11/23/15	Fluid in good condition and shows very little change from January 2015 sample. Suggest annual samples going forward, or more frequently if process conditions become severe. Pentane Insolubles levels are high.
01/13/15	Generally the fluid looks in good condition with a few comments to consider. Pentane Insolubles (suspended solids) are increasing over time. Installation of a system filter can help mitigate this condition. Water content can be reduced by short term venting of system. Suggest installation of a system filter, then re-sampling fluid in 6 months to monitor fluid condition. Pentane Insolubles levels are high.

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