

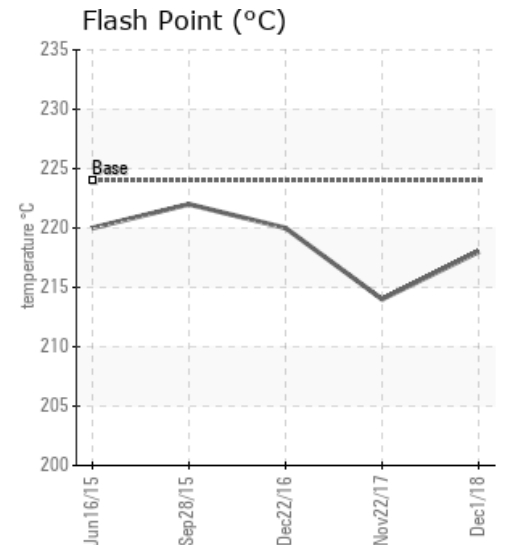
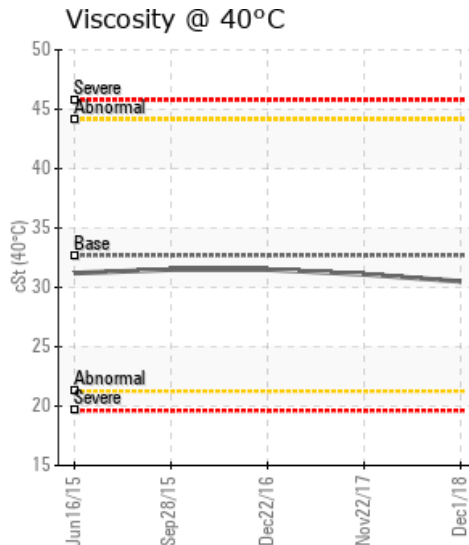
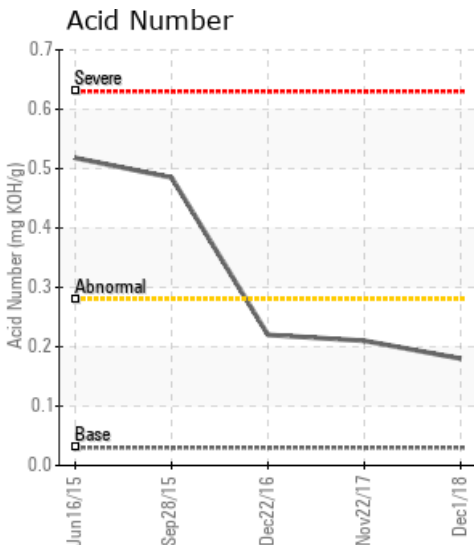
## [WESTERN ASPHALT PRODUCTS LSD / BRANDON MANITOBA] BRANDON HOT OIL

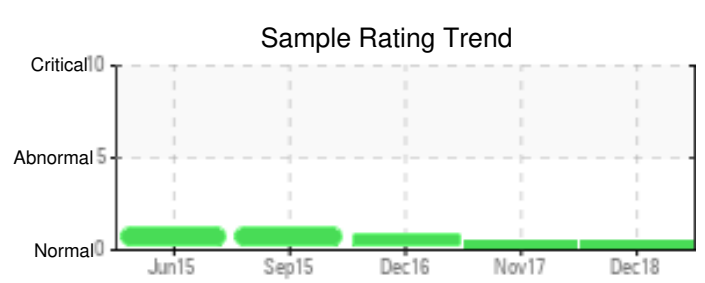
Customer: PTRHTF20161	System Information	Sample Information
Western Asphalt Products 65 Limestone Rd E Brandon, MB R7A 7L5 Canada Attn: Adam Mahaney Tel: (204)573-7347 E-Mail: mahaney@westernasphalt.ca	System Volume: 3700 ltr Bulk Operating Temp: 340F / 171C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: GENCOR	Lab No: 02260072 Analyst: Yutong Gao Sample Date: 12/01/18 Received Date: 01/03/19 Completed: 01/08/19

Recommendation: The fluid has adequate viscosity, flash point and distillation points. The Acid Number and solid content are all low. The current fluid condition is quite consistent over the past 3.5 years. Please continue to run this fluid and take one sample in 12 months to monitor the conditions.

Comments:

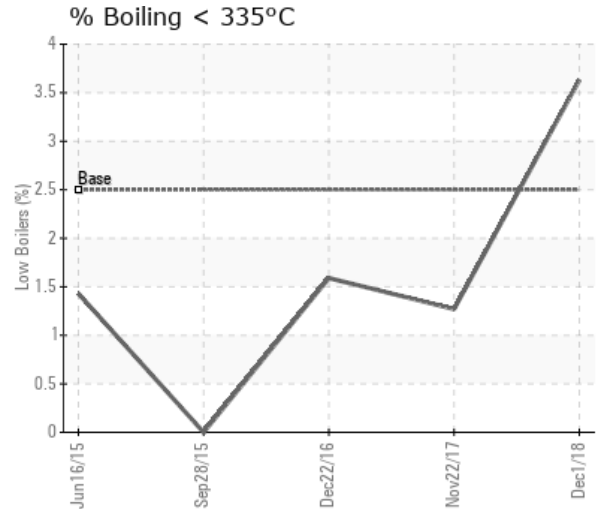
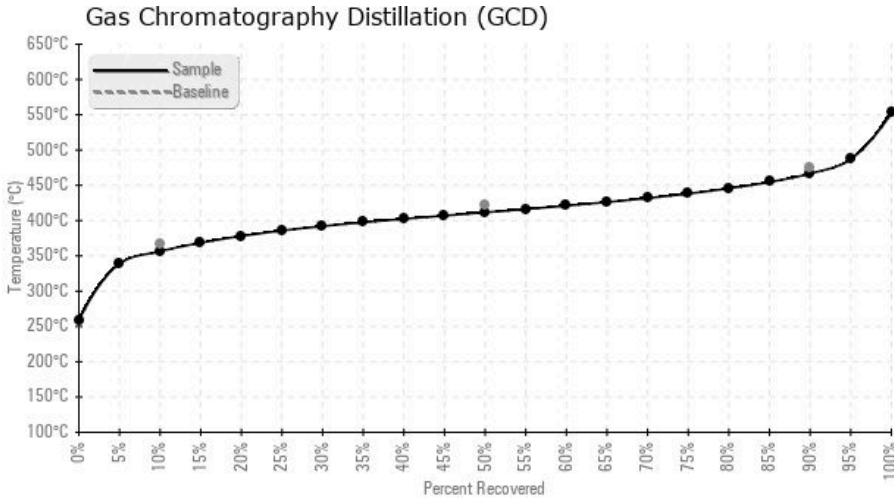
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/01/18	01/03/19	3y		424 / 218	9.8	30.5	0.18	0.056	674 / 356	773 / 412	872 / 467	3.63
11/22/17	11/27/17	0y		417 / 214	4.5	31.1	0.21	0.116	699 / 371	795 / 424	890 / 477	1.27
12/22/16	12/29/16	19y	HEATER	428 / 220	10.6	31.5	0.22	0.147	702 / 372	805 / 429	908 / 486	1.59
09/28/15	10/06/15	0y		432 / 222	119.1	31.5	0.485	0.351	712 / 378	798 / 426	886 / 475	0.00
06/16/15	06/22/15	1y	HOT OIL HEATER	428 / 220	0.00	31.2	0.518	0.215	701 / 372	801 / 427	904 / 485	1.43
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





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
12/01/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0
11/22/17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0
12/22/16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	0
09/28/15	5	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	48	0
06/16/15	4	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	52	0
Baseline Data			0	0						0			0	0					0				270	

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



### Historical Comments

11/22/17	The current fluid is in good conditions and suitable for further operation. Please take one sample in one year and monitor the conditions. Please also provide the oil working hours with the next sample. Normal viscosity, acid number, and distillation points. The water and solid contents are all minimum.
12/22/16	The current fluid has adequate viscosity, flash point, acid number and distillation points. The fluid properties are very similar in the past 19months. Please take one sample in one year to monitor the conditions.
09/28/15	The current Calflo AF has the adequate viscosity, flash point and the distillation points. It is suitable for continual use. The higher TAN number indicate there are some oxidation because it is an open system. Please pay attention to the contamination control, reduce the bulk temperature as much as possible to slow the oxidation, record the oil top up rate (~L/month), and take one sample to monitor in 9 months. Acid Number (AN) is high.
06/16/15	The current Calflo AF has the adequate viscosity, flash point and the distillation points. It is suitable for continual use. The higher TAN number indicate there are some oxidation because it is an open system. Please pay attention to the contamination control, reduce the bulk temperature as much as possible to slow the oxidation, record the oil top up rate (~L/month), and take one sample to monitor in 6-8 months. Acid Number (AN) is high.

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