

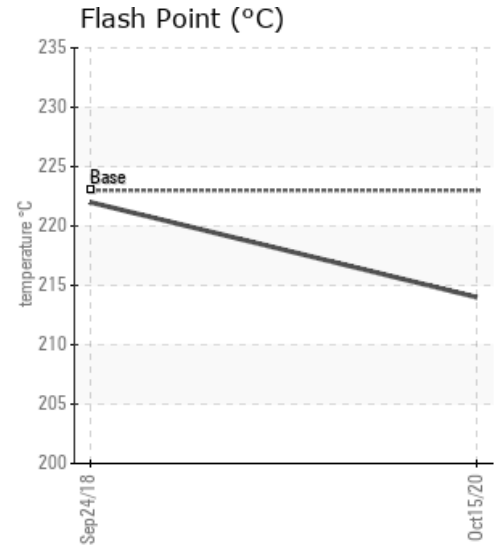
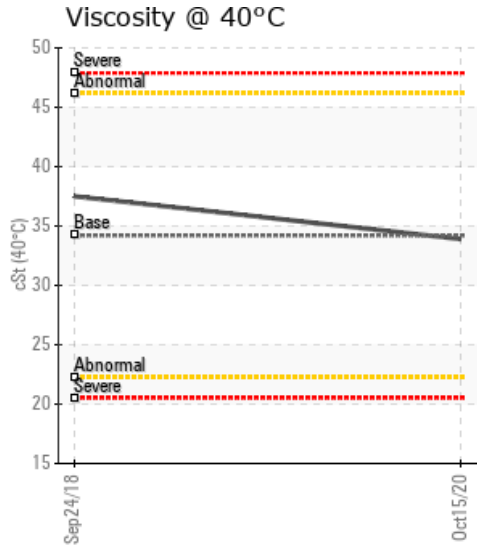
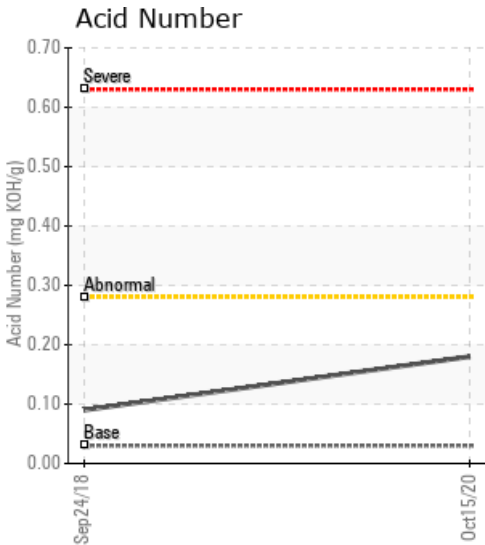
CHICAGO OGDEN PLANT

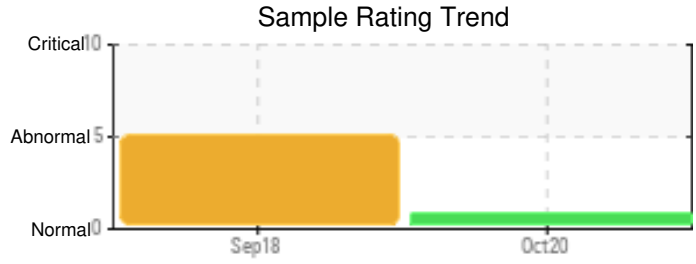
Customer: PTRHTF30109	System Information	Sample Information
RELIABLE MATERIALS LLC 5500 S PULASKI CHICAGO, IL 60629 USA Attn: Bob Madden Tel: (630)774-4120 E-Mail: rmadden@biganepaving.com	System Volume: 600 gal Bulk Operating Temp: 325F / 163C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02386077 Analyst: Yvette Trzcinski Sample Date: 10/15/20 Received Date: 11/09/20 Completed: 11/12/20 Yvette Trzcinski yvette.trzcinski@petrocanadalsp.com

Recommendation: There is some slight degradation of the fluid but the fluid is suitable for continued service. Resample in 6 - 12 months

Comments: (GCD) 90% Distillation Point is marginally high.

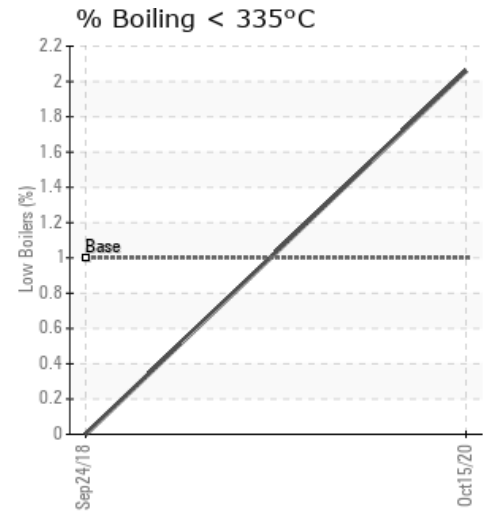
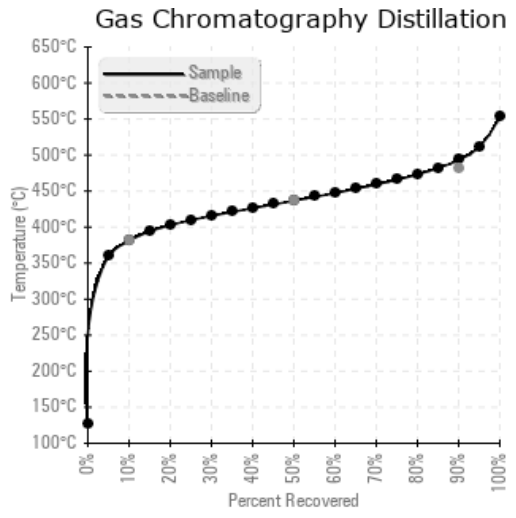
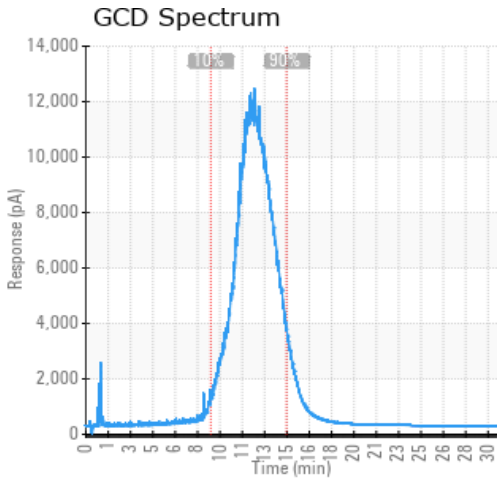
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/15/20	11/09/20	1y	Boiler	417 / 214	12.1	33.9	0.18	0.115	718 / 381	818 / 437	919 / 493	2.06
09/24/18	10/03/18	4y		432 / 222	42.3	37.5	0.09	0.317	687 / 364	792 / 422	898 / 481	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
10/15/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/24/18	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	145	0	0	2
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

09/24/18	The sample shows signs of thermal cracking - the GCD distillation points at 10% and 90% are lower than for new oil the fluid is thermally degrading creating lighter/shorter hydrocarbons lowering viscosity which is 10% lighter than new fluid and can lead to heavy carbonaceous deposits that can foul the system leading to system inefficiencies. (GCD) 90% Distillation Point is severely low. Calcium ppm levels are severely high.

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.