

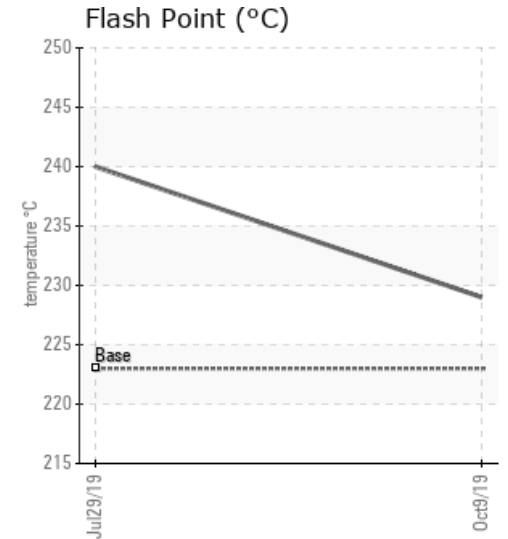
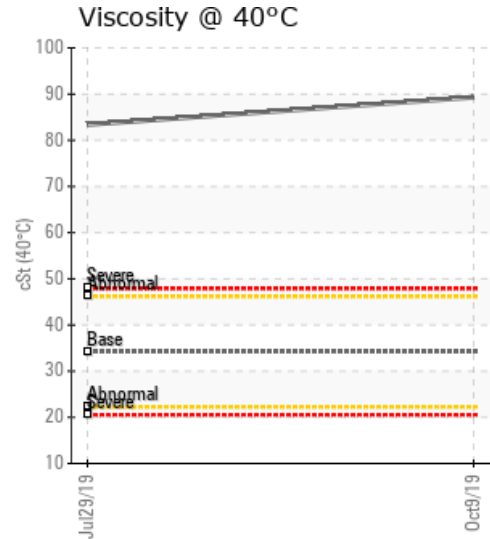
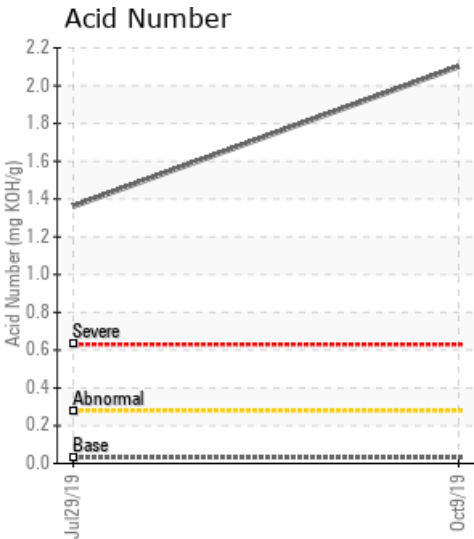
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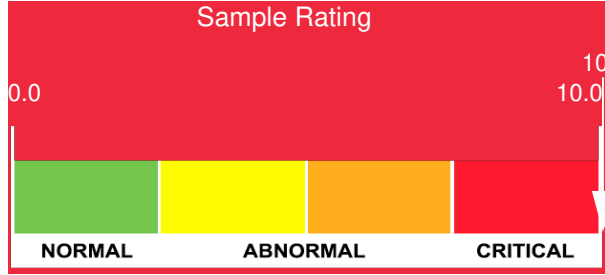
Customer: PTRHTF20217	System Information	Sample Information
McAsphalt Industries LTD 4529 Industrial Park Rd Macklin, SK S0L 2C0 Canada Attn: Nick Lovell Tel: (306)753-2717 E-Mail: nlovell@mcasphalt.com	System Volume: 5000 ltr Bulk Operating Temp: 392F / 200C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: CEI	Lab No: 02313735 Analyst: Behshad Sabah Sample Date: 10/09/19 Received Date: 10/10/19 Completed: 10/21/19

Recommendation: High Viscosity, TAN and Pentane insoluble show the high HTF oxidation. the high Iron indicates the internal corrosion with the chance or pinhole and product leak. please manage to change the oil.

Comments: PQ levels are severe. Iron ppm levels are abnormal. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is severely high. Visc @ 40°C is severely high.

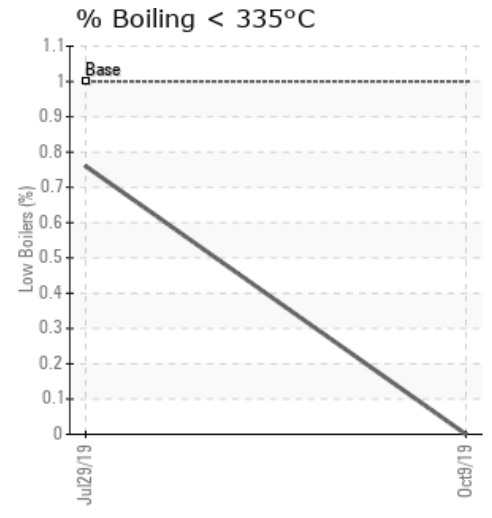
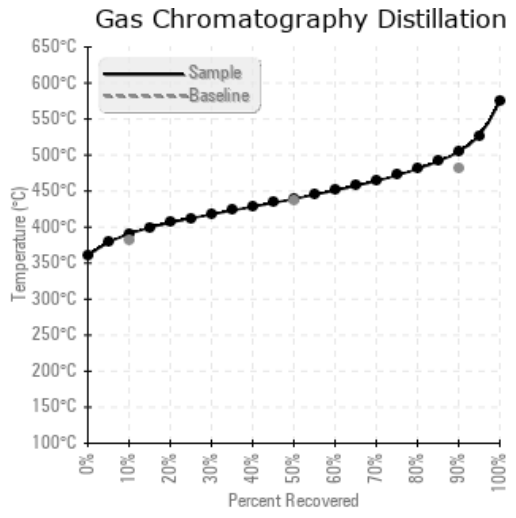
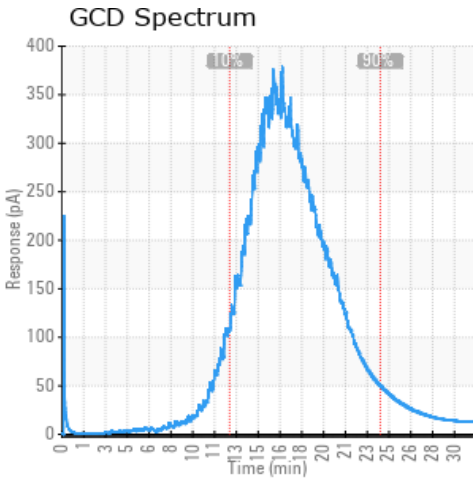
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/09/19	10/10/19	1y		444 / 229	61.5	89.3	2.10	7.50	735 / 391	823 / 439	940 / 505	0.00
07/29/19	07/31/19	5y	MN DISTRIBU DISCHARG	464 / 240	90.7	83.4	1.36	7.82	713 / 378	811 / 433	932 / 500	0.76
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
10/09/19	244	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	3	0	0	0	0	0	0	0
07/29/19	240	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0
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

07/29/19	High TAN, High Pentane Insoluble and high viscosity are the indication of the oil oxidation, the formed acid will corrode the pipes and fittings with the risk of pinholes and oil leak. please change the oilPQ levels are severe. Iron ppm levels are abnormal. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. Visc @ 40°C is severely high. (GCD) 90% Distillation Point is abnormally high.

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