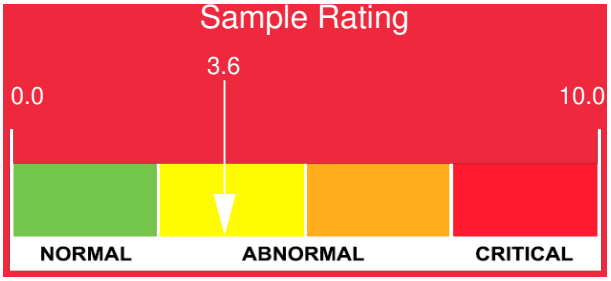
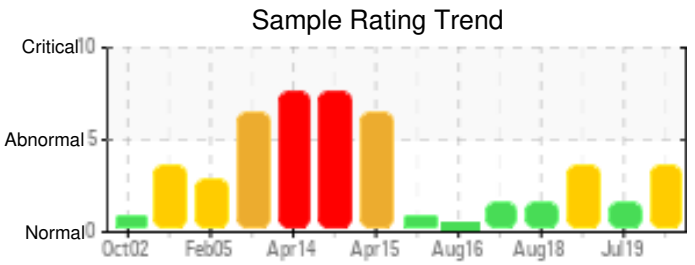




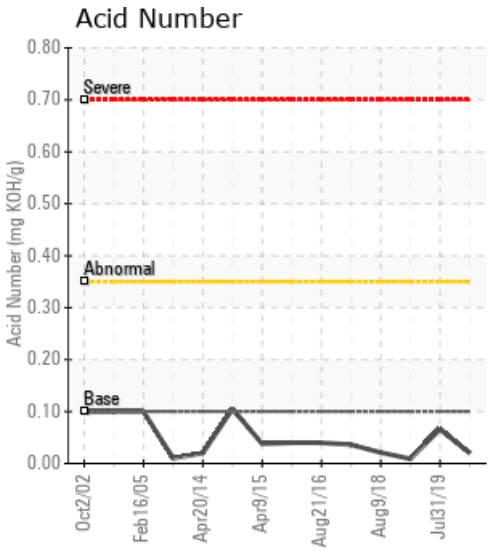
LINE 1

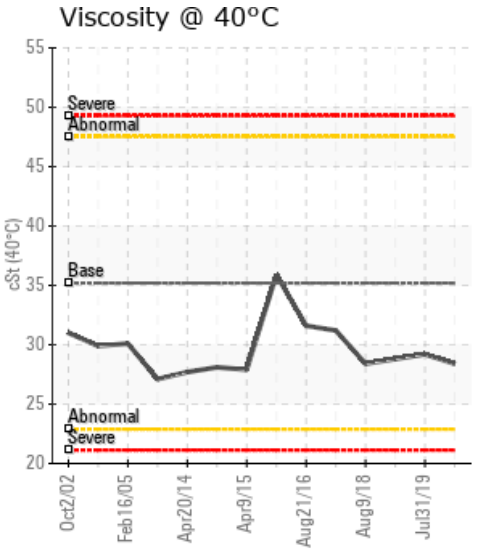
Customer: PTRHTF20031	System Information	Sample Information
MCCAIN FOODS PORTAGE PO BOX 220 1 Mccain Avenue PORTAGE LA PRARIE, MB R1N 3B5 Canada Attn: Mark Nelissen Tel: x:	System Volume: 19000 ltr Bulk Operating Temp: 540F / 282C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: KONUS-KESSEL	Lab No: 02415560 Analyst: Peter Harteveld Sample Date: 08/09/20 Received Date: 04/16/21 Completed: 04/20/21 Peter Harteveld peter.harteveld@hollyfrontier.com

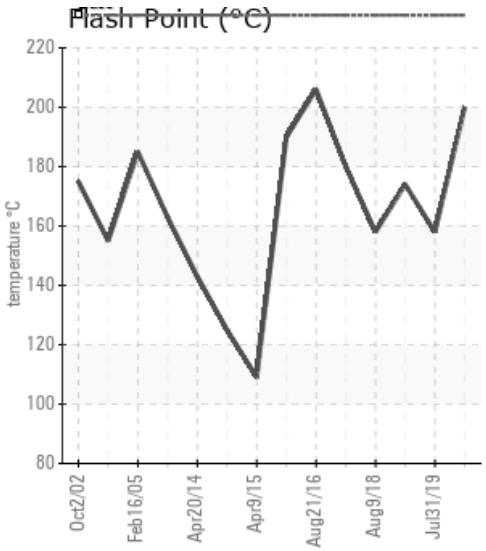
Recommendation: The fluid is in a good condition and suitable for further use. The combination of low viscosity, reduced Flash Point, low 10% GCD temperature and an elevated low boiler vapor content of 9.44% indicates thermal degradation of the fluid. It is advised to vent off the low boiler vapors. Please re-sample in 6 months and note down fluid service life on the analysis request form.

Comments: (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. COC Flash Point is marginally low.

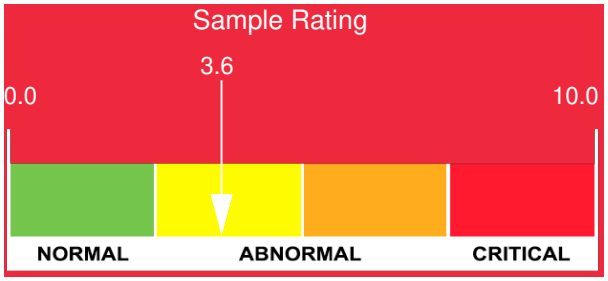
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
08/09/20	04/16/21	0.0y		392 / 200	21.5	28.4	0.02	0.071	636 / 335	785 / 418	914 / 490	9.44
07/31/19	08/06/19	0.0y	2 PRIMARY	316 / 158	11.3	29.2	0.066	0.046	672 / 356	801 / 427	912 / 489	6.30
03/04/19	03/07/19	2.5y	2 PRIMARY PUMP DISCH	345 / 174	10.0	28.8	0.009	0.109	650 / 343	790 / 421	900 / 482	8.33
08/09/18	08/15/18	3.0y	#2 THERMAL OIL PUMP	316 / 158	17.1	28.4	0.021	0.021	679 / 360	800 / 427	909 / 487	5.52
12/29/16	01/06/17	1.3y	#2 PRIMARY PMP DISCH	356 / 180	28.9	31.2	0.036	0.039	699 / 371	817 / 436	931 / 499	3.65
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75

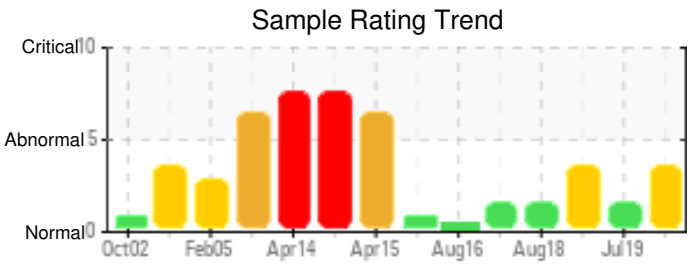






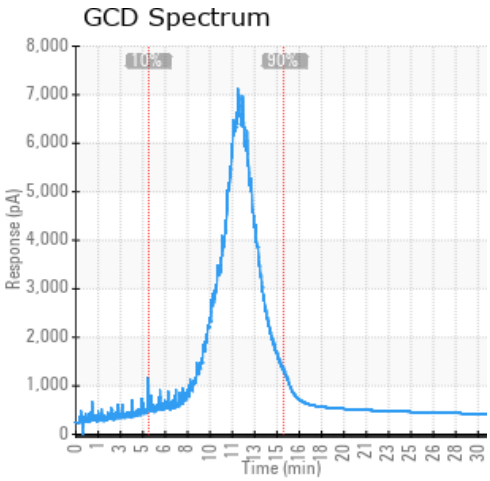
PETRO-CANADA LUBRICANTS

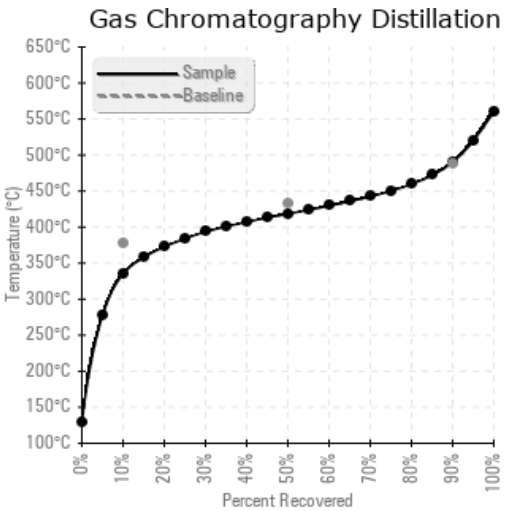


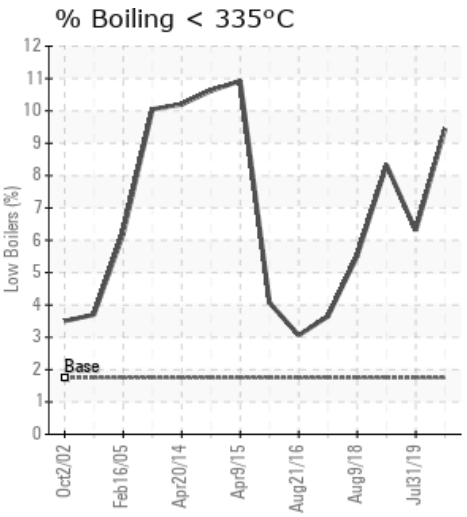


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
08/09/20	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0
07/31/19	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0
03/04/19	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0
08/09/18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0
12/29/16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0
Baseline Data			0	0						0			0	0				0	0				280	

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







Historical Comments

07/31/19	The current fluid has normal viscosity and distillation points. The acid number and solid contents are all low meaning the minimum fluid oxidation. The reduced flash point is due to the thermal cracking at the constant 282C high bulk temperature. Please conduct the system venting as much as possible. Take one sample in 6 months to monitor the fluid conditions. COC Flash Point is low.
03/04/19	The current fluid condition have been improved after the system venting in the last week of Feb. The viscosity is normal, the contaminants such as water, dirt are minimum. The acid number is extremely low indicating minimum oil oxidation. The flash point is still lower than the fresh fluid due to the thermal cracking at high bulk fluid temperature. Please continue to run the fluid and conduct the system venting as a routine maintenance activity, take one sample in 6 months to monitor the conditions. COC Flash Point is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.
08/09/18	The current fluid has normal viscosity, acid number and the distillation points. However, the fluid has high content of the low boiler due to the thermal cracking at the 285 C bulk working temperature. Please conduct a longer and more efficient system venting and take one sample in 6 months to monitor the conditions. It is also better to get the AIT test done to verify the property. COC Flash Point is severely low.
12/29/16	The fluid has adequate viscosity, TAN, solid content and the GCD distillation point. The flash point is reduced a little bit from the result in Summer 2016, but the oil is suitable for the further run. Please continue to do the effective system venting to release the low boilers.