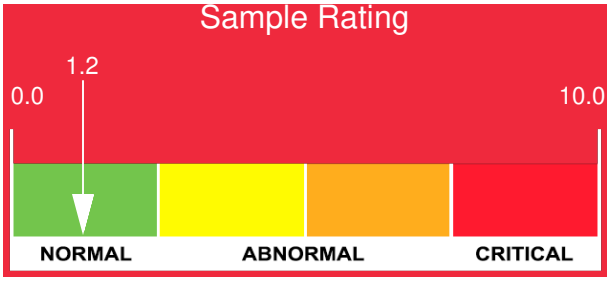
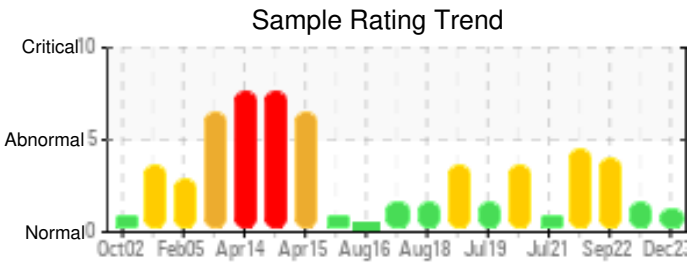




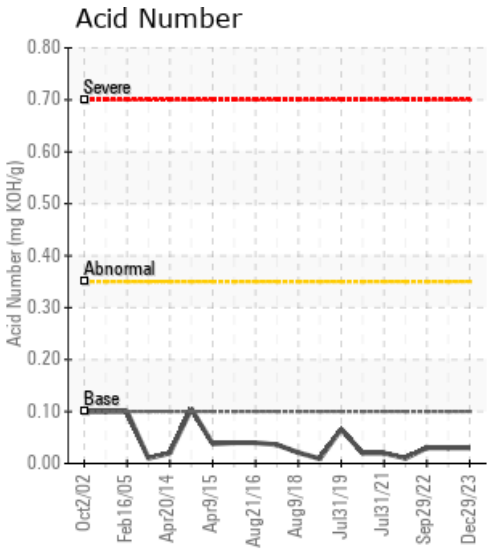
LINE 1

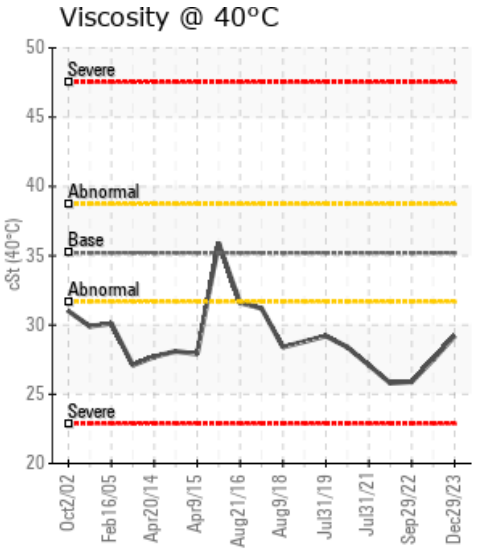
Customer: PTRHTF20031	System Information	Sample Information
MCCAIN FOODS PORTAGE PO BOX 220 1 Mccain Avenue PORTAGE LA PRARIE, MB R1N 3B5 CA Attn: Chad Laing Tel:	System Volume: 19000 ltr Bulk Operating Temp: 540F / 282C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: KONUS-KESSEL	Lab No: 02607339 Analyst: Nick Finelli Sample Date: 12/29/23 Received Date: 01/08/24 Completed: 01/30/24 Nick Finelli nick.finelli@hfsinclair.com

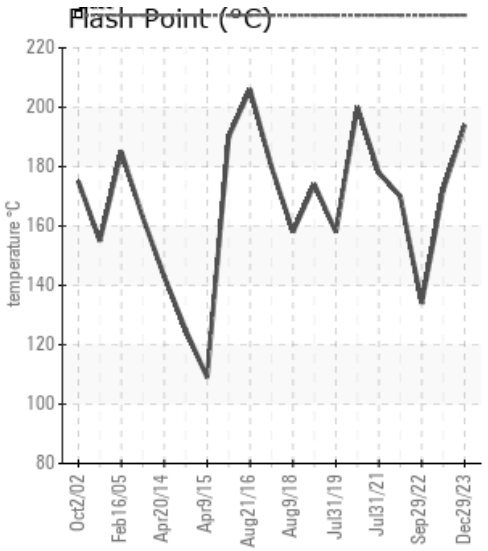
Recommendation: Viscosity at 40C and flash point have been trending lower over the past few samples. We will continue to monitor until system change out 2025.

Comments: Visc @ 40°C is abnormally low. COC Flash Point is marginally low.

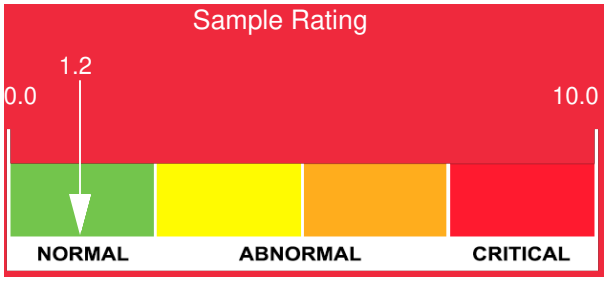
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/29/23	01/08/24	7.0y		381 / 194	23	29.2	0.03	0.039	663 / 351	803 / 428	919 / 493	7.40
12/26/22	01/16/23	7.0y		342 / 172	3.7	27.5	0.03	0.034	678 / 359	807 / 431	917 / 492	6.65
09/29/22	11/10/22	6.0y		273 / 134	18.3	25.9	0.03	0.027	661 / 349	803 / 428	913 / 490	7.79
01/17/22	02/04/22	6.0y	#2 toh drop vent	338 / 170	8.3	25.8	0.01	0.031	658 / 348	801 / 427	911 / 489	7.89
07/31/21	08/12/21	5.0y		352 / 178	38.8	27.1	0.02	0.081	669 / 354	805 / 429	917 / 492	7.13
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75

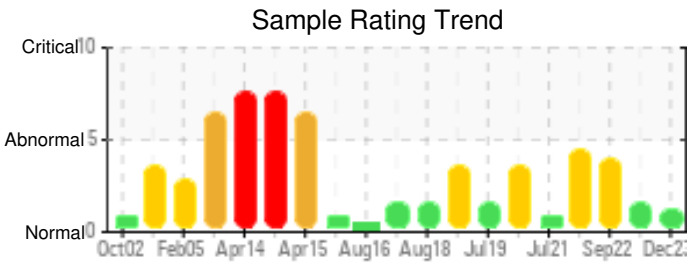






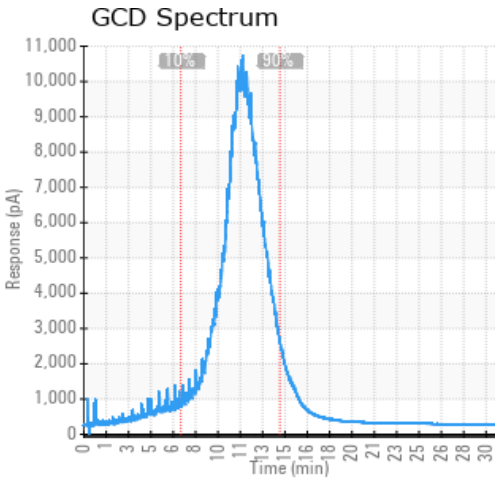
PETRO-CANADA LUBRICANTS

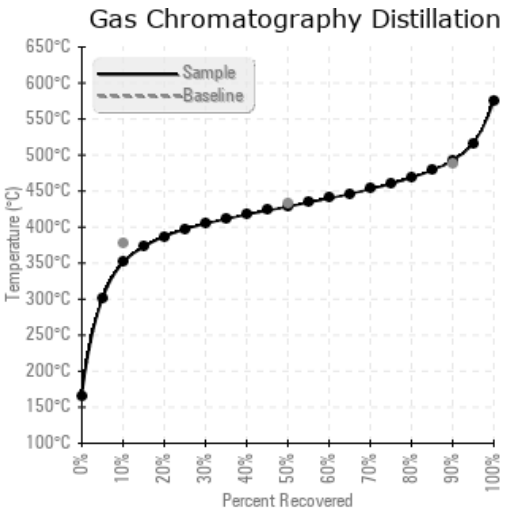


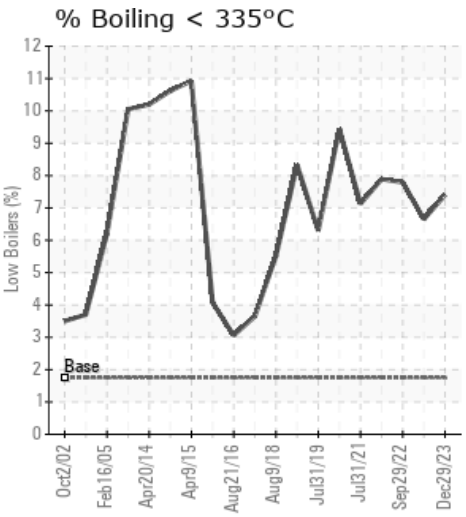


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
12/29/23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
12/26/22	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0
09/29/22	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0
01/17/22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
07/31/21	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	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

12/26/22	The viscosity of the fluid is low. The Flash Point is low but improved over previous test. Thermal degradation of the fluid is present. The recommendation is the same as before: Please keep venting low boiler vapor to atmosphere at a regular basis to keep Flash Point to an acceptable level. Please re-sample in 3 months.
09/29/22	The viscosity of the fluid is low. The Flash Point is very low. These in combination with a low 10% GCD distillation temperature and high % boil-off below 335 degrees C. indicate thermal degradation of the fluid resulting in a high low boiler vapor content. The recommendation is the same as before: Please keep venting low boiler vapor to atmosphere at a regular basis to restore the Flash Point to an acceptable level. Please re-sample in 3 months. COC Flash Point is severely low. Visc @ 40°C is abnormally low. (GCD) % < 335°C is marginally high.
01/17/22	Thermal degradation of the fluid is causing a decrease in viscosity, Flash Point and 10% GCD temperature. Low boiler vapor content is elevated (GCD% <335C = 7.89%) It is advised to vent off low boiler vapor to atmosphere on a regular basis a part of fluid maintenance. Please re-sample in 3 months to check the effect of the venting. COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.
07/31/21	The fluid is in a good condition and suitable for further use but thermal degradation has increased the low boiler vapor content. (% GCD<335C. = 7.13) Indications of thermal degradation are a slight decrease in viscosity in combination with a reduced Flash Point and 10% GCD temperature.It is recommended to vent off low boiler vapor as part of fluid maintenance. Please vent once a week for 3 months and submit a sample after doing that. COC Flash Point is abnormally low.