Sample Rating

0.0   1.6   10.0

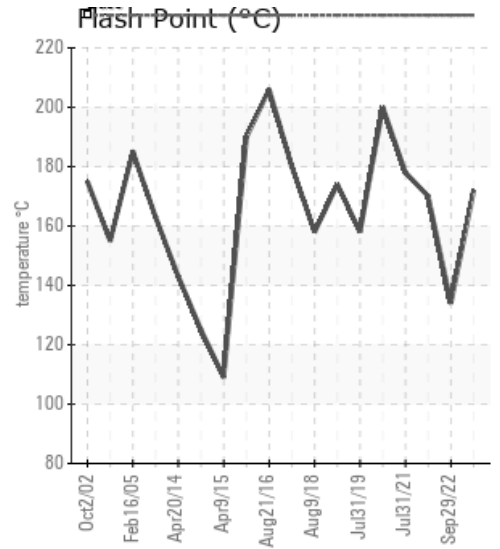| NORMAL | ABNORMAL | CRITICAL |

Sample Rating Trend
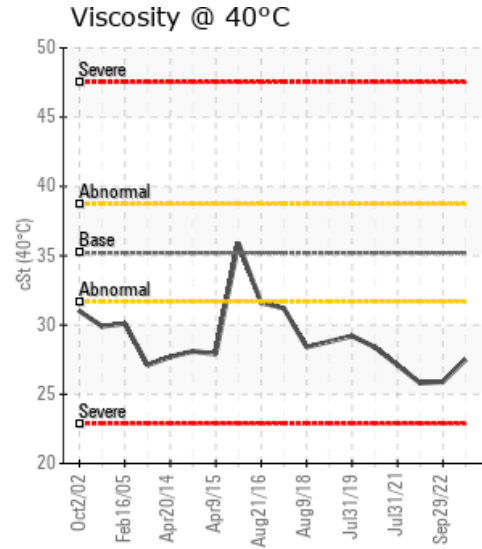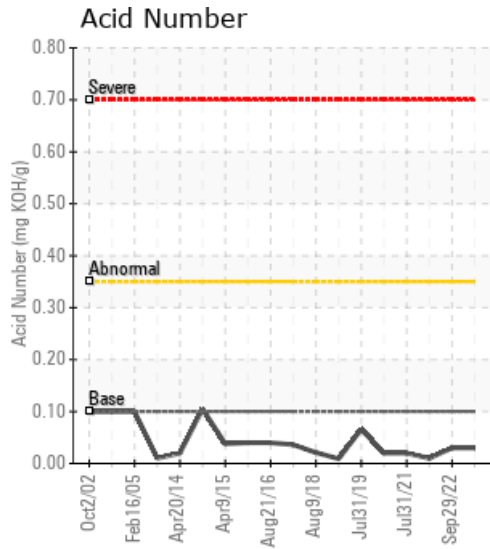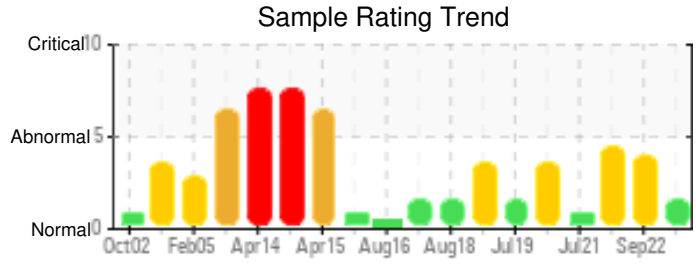

LINE 1

Customer: PTRHTF20031	System Information	Sample Information
MCCAIN FOODS PORTAGE PO BOX 220 1 Mccain Avenue PORTAGE LA PRARIE, MB R1N 3B5 Canada Attn: Nick Kelly Tel:	System Volume: 19000 ltr Bulk Operating Temp: 540F / 282C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: KONUS-KESSEL	Lab No: 02533600 Analyst: Nick Finelli Sample Date: 12/26/22 Received Date: 01/16/23 Completed: 03/06/23 Nick Finelli nick.finelli@hfsinclair.com

Recommendation: 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.
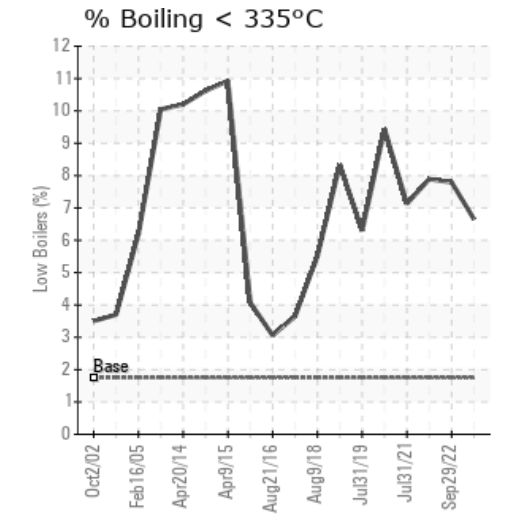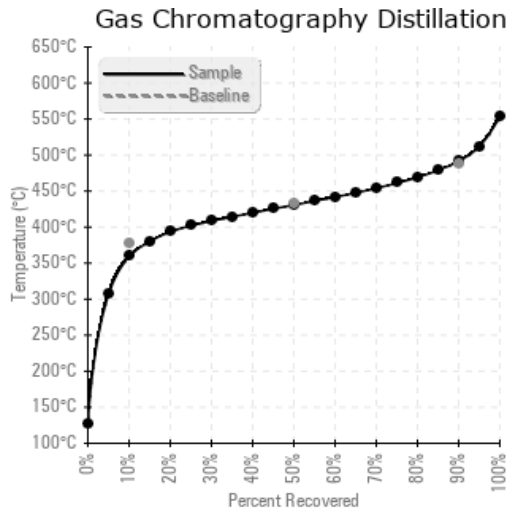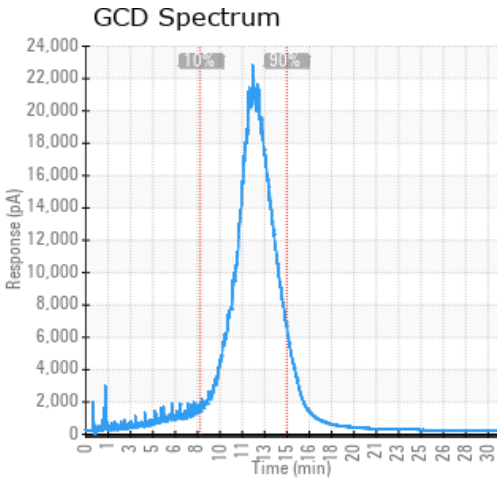
Comments:

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	%
12/26/22	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
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
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75

Acid Number

Viscosity @ 40°C

Flash Point (°C)

PETRO-CANADA LUBRICANTS

Sample Rating

0.0   1.6   10.0

NORMAL   ABNORMAL   CRITICAL

Sample Rating Trend

Critical 10 — Abnormal 5 — Normal 0

Oct02 Feb05 Apr14 Apr15 Aug16 Aug18 Jul19 Jul21 Sep22

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
12/26/22	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
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
Baseline Data			0	0						0			0	0			0	0		0	0		280	

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

GCD Spectrum

Gas Chromatography Distillation

% Boiling < 335°C

Historical Comments

Date	Comment
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.
08/09/20	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. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. COC Flash Point is marginally low.